

Intermediate Level Interdisciplinary Models

Intermediate Level Interdisciplinary Models

The interdisciplinary model for grade four contains six unit frameworks and all grade four content bullets from the *Program of Studies*. The fifth-grade model contains four unit frameworks and is meant to be only a sample of how interdisciplinary models can be designed for fifth grade. All grade five content bullets from the *Program of Studies* are not included in the four unit frameworks.

Grade 4 Interdisciplinary Model

Health and Personal Wellness

Broad-Based Theme:	Physical, Mental, and Emotional Wellness
Content Area:	Health
Supplemental Content Areas:	English/Language Arts, Science, Mathematics, Arts and Humanities (Visual Arts, Music, Dance, Drama)

Unit Framework Overview:

In this unit framework, students investigate personal responsibility for their health and well-being. Sample activities guide students through an inquiry process to

- explore healthy decisions that are unique for each individual,
- show that mental and emotional wellness parallel the need for physical wellness,
- illustrate how reflection and collaboration helps them learn about themselves, and
- learn how their actions and feelings affect others.

Pages of the unit frameworks are arranged in pairs. On the left page of each pair are guiding questions along with related academic expectations and correlations to the *Program of Studies*. The unit framework is organized around guiding questions that direct teachers' choices of activities. Students should be able to answer these questions by the end of the unit framework.

Sample activities for each instructional setting (e.g., whole group, flexible groups, learning centers, independent work) are listed in columns. Activities are aligned horizontally to demonstrate how instruction moves from guided or facilitated learning to independent learning and self-reflection by the students. Sample activities are varied to support students' individual learning styles and interests. Students work in appropriate large and small cooperative groups and as independent learners. While sample activities address *Program of Studies* content, they are not intended to be comprehensive. Some content bullets included in the unit frameworks designate skills and processes that should be taught throughout the year (e.g., mathematical procedures and computations) but are not repeated in every framework. (See the *Curriculum and Evaluation Standards for School Mathematics Addenda Series*, National Council of Teachers of Mathematics, for additional activities in mathematics. The *National Science Education Standards* provide more details and explanations regarding scientific inquiry, conceptual understandings, and applications/connections.) Teachers are responsible for planning instruction that includes appropriate extensions for unit framework activities to address the interests, needs, and abilities of all students including gifted and talented, children with disabilities, and those with limited English proficiency.

Guiding Questions:

- How can I achieve personal well-being and appreciate its effects on others?
- What can I do to ensure personal wellness?
- How can I benefit from regular physical exercise?
- How will improving fundamental skills contribute to the enjoyment of physical activity?
- How will cooperation aid in my skill development?
- How does making responsible choices affect my mental health?
- How can I solve problems that involve collecting and analyzing data?
- How does probability affect outcomes?

Grade 4 Interdisciplinary Model Health and Personal Wellness

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Physical Wellness (2.31)</p> <p>Mental Wellness (2.32)</p> <p>Self-Control and Self-Discipline (3.5)</p> <p>Reading (1.2)</p> <p>Consumer Decisions (2.30)</p> <p>Visual Arts (1.13, 2.22, 2.26)</p> <p>Music (1.14, 2.22, 2.26)</p> <p>Dance (1.15, 2.22, 2.26)</p> <p>Drama (2.22 - 2.26)</p> <p>Writing (1.11)</p>	<p>How can I achieve personal well-being and appreciate its effects on others?</p>	<p>Students will Health All <i>Program of Studies</i> Individual Well-Being bullets are included in this guiding question.</p> <ul style="list-style-type: none"> • use good health habits that prevent the spread of disease. <p>English/Language Arts</p> <ul style="list-style-type: none"> • understand and respond to a variety of reading materials. • respond to author's opinions. • use text features to interpret transactive writing. • apply writing-to-learn and writing-to-demonstrate-learning strategies. • write personal pieces. • apply characteristics of effective writing. • identify information to address student developed questions. <p>Arts and Humanities</p> <ul style="list-style-type: none"> • recognize the three purposes of dance. • explore simple dances with a beginning, middle, and end. • create movement sequences that include repetition and variety using different locomotor and nonlocomotor movements. • create simple dramatic works using the elements of drama. • use elements of music. • use appropriate terminology to discuss elements of drama such as plot, character, visuals and acting. • demonstrate through performance various types of drama. • create works of arts using elements of art and principles of design. • recognize that artists express themselves in different styles. 	<p>Students will</p> <ul style="list-style-type: none"> • create charts that show human characteristics (e.g., social, emotional, mental, physical). Illustrate positive and negative examples of each. • use graphic visual representations of person divided in half to represent healthy and unhealthy habits. Develop goals to improve unhealthy habits. Chart good health habits that prevent disease. • involve school guidance counselors or community counselors in role-playing conflict management techniques. Explore strategies that can be used on daily basis. Identify how individual behaviors affect groups.

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Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • use text features and organizational patterns to interpret informational material. Describe social, emotional, mental, and physical health. Summarize information in journals. Identify ways they have grown and changed in each area during past year. • participate in mini-lessons provided by community volunteers to enhance awareness of the arts (e.g., demonstrate various types of drama, recognize purposes of dance, participate in dance activities to explore simple dances with beginning, middle, and end). Describe how dance differs from other physical movements. Explore artistic styles and how musicians, artists and dancers express themselves. Describe reactions to mini-lessons in learning logs. • interview school personnel about importance of maintaining self-control. Develop dramatic presentations demonstrating dos and don'ts of various jobs. Identify how individuals and groups are interdependent. 	<p>Students will</p> <ul style="list-style-type: none"> • create skits to demonstrate appropriate and inappropriate characteristics of behaviors. Investigate effect of behaviors on other people. Identify strategies for dealing with conflict, respect, and group interdependency. • use techniques from mini-lessons and create songs, dances, and/or visual art to use in promoting physical and emotional health. Identify how physical, emotional, and social changes are a normal part of growth and development. Videotape and share with school. • generate questions to interview employees at school about the importance of self-control on the job. Create diagrams to explore behavior and interdependence of school personnel. 	<p>Students will</p> <ul style="list-style-type: none"> • generate lists of personal characteristics useful for individuals participating in class trips. Design rules that could be used for field trips allowing all groups to function effectively. • use journals to develop self-improvement plans. Identify areas of personal weaknesses. Plan simple realistic goals for improvement and keep progress charts. • read stories dealing with conflict and resolution. Complete story maps showing how characters dealt with problems (e.g., Did you agree with author's solutions?). Discuss solutions with peers and identify other techniques that might have worked. 	<p>Students will</p> <ul style="list-style-type: none"> • create skits using the elements of drama to show appropriate and group inappropriate behaviors (e.g., interdependence, conflict, and respect for others). • create reflective writing pieces that describe goals of self-improvement plans. Identify actions taken to improve and plot success toward achieving goals. • identify and describe three types of conflicts experienced with peers, family, or school staff. Give examples in journals of appropriate resolution strategies.

Grade 4 Interdisciplinary Model Health and Personal Wellness

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Personal Wellness (2.31)</p> <p>Lifetime Activity (2.35)</p> <p>Healthy Lifestyle (3.2)</p> <p>Scientific Ways of Thinking and Working (2.1)</p> <p>Writing (1.11)</p> <p>Speaking/Listening/Observing (1.3, 1.4, 1.12)</p> <p>Visual Arts (1.13, 2.22, 2.26)</p> <p>Drama (2.22 - 2.26)</p>	<p>What can I do to ensure personal wellness?</p>	<p>Students will Health</p> <ul style="list-style-type: none"> • identify and practice good health habits. • follow safety rules. • use food guide pyramid. • recognize how food affects growth. • practice school safety procedures. • adhere to traffic safety rules. • use personal safety strategies. • identify roles and responsibilities of healthcare workers in schools and communities. • access community-sponsored agencies that maintain and promote health and safety. • demonstrate procedures for basic emergency assistance. <p>English/Language Arts</p> <ul style="list-style-type: none"> • understand and respond to a variety of reading material. • employ reading strategies. • apply writing-to-learn and writing-to-demonstrate-learning strategies. • write transactive pieces. • use information from various sources to produce writing. • use technology to access ideas. • prepare and deliver formal presentations. • use contextual vocabulary and comprehension strategies to understand text. • recognize the purpose and effectiveness of formal and informal messages. <p>Science All <i>Program of Studies</i> Scientific Inquiry bullets are included in this guiding question.</p> <p>Arts and Humanities</p> <ul style="list-style-type: none"> • create works of art using the elements of art and principles of design. • discuss elements of drama. • demonstrate through performance various types of drama. 	<p>Students will</p> <ul style="list-style-type: none"> • identify good health habits by interviewing community and school healthcare workers (e.g., doctor, dentist, nurse, dental hygienist). Identify the roles and responsibilities of healthcare workers. Use information to create informational books for primary students. • observe local agencies (e.g., Future Farmers of America, Department of Agriculture., fire department, local companies, county extension office) demonstrating safety practices. • interview restaurant managers about health regulations that must be followed. Debate importance of regulations. <p style="text-align: right;"><i>Continued on page 8</i></p>

Grade 4 Interdisciplinary Model Health and Personal Wellness

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • write letters requesting information on non-profit, health-related agencies (e.g., Red Cross, American Heart Association, Hospice). Use available technology to develop displays showing how organizations encourage and support personal wellness. Display in school library. • participate in dramatic skills lessons identifying elements of production and performance techniques addressing safety rules in various environments (e.g., school, home, car, playground, community). Videotape for school-wide safety awareness campaigns. • use various resources to investigate food pyramid. Use contextual vocabulary and comprehension strategies to understand text. Develop poems or songs explaining effect of each food group on their health. 	<p>Students will</p> <ul style="list-style-type: none"> • design investigations to gather data about some aspect of health and safety of peers (e.g., Do you wear seat belts or bike helmets, exercise, eat vegetables?). Report results to class. • select and list items for classroom first aid kit. Comparison shop for items charting size, and price to determine best buy. • design scientific investigation to determine number of cups of ice required to meet daily recommended requirements of water. Estimate, experiment, communicate design, procedures, and results. Review and question peers. 	<p>Students will</p> <ul style="list-style-type: none"> • create posters promoting good health habits that prevent spread of disease and display in halls. Determine effectiveness of your campaign to prevent spread of disease. • develop coloring books, poems, and/or songs for younger children to demonstrate safety rules that apply to different activities (e.g., playing on playground, riding bus, crossing street, riding bike, participation in school drills). • investigate appropriate storage and handling procedures for one type of food. Develop how-to booklet, informing parents of safe and healthy practices. 	<p>Students will</p> <ul style="list-style-type: none"> • draw conclusions about health and safety issues of peers based on results of data gathered and develop articles for school newspaper. • identify five safety rules children always follow and explain reasons why followed in journals. • use criteria for effective writing to produce transactive writing about safe food handling and storage.

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<p>Personal Wellness (2.31)</p> <p>Mental Wellness (2.32)</p> <p>Lifetime Activity (2.35)</p> <p>Healthy Lifestyle (3.2)</p> <p>Writing (1.11)</p> <p>Speaking/Listening/Observing (1.3, 1.4, 1.12)</p> <p>Visual Arts (1.13, 2.22, 2.26)</p> <p>Drama (2.22 - 2.26)</p>	<p><i>Continued from page 6</i></p> <p>What can I do to ensure personal wellness?</p>	<p>Students will Health</p> <ul style="list-style-type: none"> • identify and practice good health habits. • follow safety rules. • use food guide pyramid. • recognize how food affects growth. • practice school safety procedures. • adhere to traffic safety rules. • use personal safety strategies. • identify roles and responsibilities of healthcare workers in schools and communities. • access community-sponsored agencies that maintain and promote health and safety. • demonstrate procedures for basic emergency assistance. <p>English/Language Arts</p> <ul style="list-style-type: none"> • understand and respond to a variety of reading material. • employ reading strategies. • apply writing-to-learn and writing-to-demonstrate-learning strategies. • write transactive pieces. • use information from various sources to produce writing. • use technology to access ideas. • prepare and deliver formal presentations. • use contextual vocabulary and comprehension strategies to understand text. • recognize the purpose and effectiveness of formal and informal messages. <p>Science All <i>Program of Studies</i> Scientific Inquiry bullets are included in this guiding question.</p> <p>Arts and Humanities</p> <ul style="list-style-type: none"> • create works of art using the elements of art and principles of design. • discuss elements of drama. • demonstrate through performance various types of drama. 	<p>Students will</p> <ul style="list-style-type: none"> • consult with school nutritionist to discuss procedures for developing school menus. Develop school menus for one week. • discuss causes of stress. Survey others to learn strategies for preventing or managing stress. Explore and implement ways to relieve stress.

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Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p style="text-align: center;">Personal Wellness (2.31)</p>	<p>How can I benefit from regular physical exercise?</p>	<p>Students will Physical Education</p> <ul style="list-style-type: none"> • identify benefits of regular participation in physical activity. • exercise to improve strength, fitness, and wellness. • monitor pulse rate. • demonstrate cardiorespiratory endurance. • demonstrate stretching exercises. • recognizes benefits of participation in school and community recreational activities. 	<p>Students will</p> <ul style="list-style-type: none"> • discuss benefits of regular participation in physical activity.

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Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Psychomotor (2.34)</p> <p>Lifetime Activity (2.35)</p>	<p>How will improving fundamental skills contribute to the enjoyment of physical activity?</p> <p>How will cooperation aid in my skill development?</p>	<p>Students will</p> <p>Physical Education</p> <ul style="list-style-type: none"> • perform fundamental skills while improving speed and accuracy. • develop multi-combination of movements required for successful involvement in sports and physical activities. • develop and refine movement patterns using locomotor and nonlocomotor skills and manipulatives. • demonstrate proficiency in a variety of movement skills. • apply movement strategies in various games and sports. • demonstrate cooperation with partners in small and large groups. • practice to improve skills. • apply the concept of sportsmanship in games, sports, and physical activities. 	<p>Students will</p> <ul style="list-style-type: none"> • explore and discuss the value of physical skills for successful participation in physical activities. • discuss how sportsmanship and cooperation are necessary for successful participation in small and large group physical activities.

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Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Consumer Decisions (2.30)</p> <p>Healthy Lifestyle (3.2)</p> <p>Self-Control and Self-Discipline (3.5)</p> <p>Mental Wellness (2.32)</p> <p>Inquiry (1.1)</p> <p>Reading (1.2)</p> <p>Drama (2.22 - 2.26)</p>	<p>How does making responsible choices affect my mental health?</p>	<p>Students will</p> <p>Health</p> <ul style="list-style-type: none"> • examine positive and negative consequences of choices. • identify purpose and use of medications. • analyze situations that cause stress and develop ways to manage stress. • develop awareness of personal rights and responsibilities. • develop decision making strategies. • identify agencies that protect the environment. • identify nonmedicinal drugs and the risks of taking such drugs. • use personal safety strategies. • determine ways in which goods and services used by families impact the environment. <p>English/Language Arts</p> <ul style="list-style-type: none"> • understand and respond to a variety of reading materials. • use text features to interpret transactive writing. • develop transactive reading materials. • identify information to address student-developed questions. • prepare and deliver formal presentations. <p>Arts and Humanities</p> <ul style="list-style-type: none"> • create simple dramatic works using the elements of drama. 	<p>Students will</p> <ul style="list-style-type: none"> • invite school or community counselors to class to discuss stress, effects of positive and negative stress on personal health and well-being. Develop lists of strategies to deal with personal stress. Use elements of drama to create simple dramatic works illustrating stress-management strategies. • identify community agencies that protect the environment (e.g., city government and health department). Discuss need for water treatment and garbage control. Describe how polluted water could affect their health. List ways that community agencies maintain pure water for daily use. Select one thing learned and design posters to share information with school and family. • participate in field trips to various community healthcare facilities. Identify services provided. Investigate various healthcare careers. Participate in class discussion about medicinal and nonmedicinal drugs. Discuss harmful effects of drug abuse and ways prescription drugs are sometimes misused. Make posters describing personal responsibility and decision making strategies to inform younger students about the benefits and dangers of medicines and drugs.

Grade 4 Interdisciplinary Model Health and Personal Wellness

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> investigate health problems in school or community that may cause stress for students and their families. Interview healthcare workers about possible causes and solutions. List findings in tables. research how water treatment maintains and promotes healthy communities. work with partners to read two labels from prescription medicines. Note similarities and differences in information. Analyze the directions and warnings. Compare packaging of over-the-counter medicines (e.g., child-proof, amount of waste). Chart rules for safe use of medicine. 	<p>Students will</p> <ul style="list-style-type: none"> form teams to plan advertisements for wellness habits including stress management. Create commercials to be video taped. develop flow charts to graphically demonstrate process of water filtration. Taste test various water samples. Discuss differences between bottled and tap water. Record thoughts in journals based on results. explore difference between rights and responsibilities. Prepare list of activities under each heading and write position paper. Discuss reasons why children should not smoke or use drugs. Present and summarize reasons to class. Tape record public service announcements to discourage smoking and drug use by children. Develop community campaign for positive choices. 	<p>Students will</p> <ul style="list-style-type: none"> prepare charts of personal health histories and information. devise methods for filtering water. Use print, pictures, or audiotape to describe results of filtration method used. use various resources to investigate harmful effects of cigarettes. Analyze information on effects of tobacco. Express opinions on whether cigarettes should be legal through speech to class or school. 	<p>Students will</p> <ul style="list-style-type: none"> write stories illustrating personal experiences when stress was or was not managed effectively. design water filtration system to demonstrate effects of water treatment. Present to class. write letters to friends encouraging them not to smoke or use drugs.

Grade 4 Interdisciplinary Model
Health and Personal Wellness

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p style="text-align: center;">Number Computation (2.7, 2.8, 2.12)</p> <p style="text-align: center;">Probability and Statistics (2.13)</p> <p style="text-align: center;">Writing (1.11)</p>	<p>How can I solve problems that involve collecting and analyzing data?</p>	<p>Students will Mathematics</p> <ul style="list-style-type: none"> • understand and apply computational procedures. • add/subtract, multiply/divide whole numbers. • pose questions, collect, organize, display, and analyze data. • draw conclusions based on data. • choose appropriate means to collect and represent data. • explore line graphs to show change over time. • explore circle graphs. <p>English/Language Arts</p> <ul style="list-style-type: none"> • develop writing-to-learn and writing-to-demonstrate-learning strategies. • identify information to address student-developed questions. 	<p>Students will</p> <ul style="list-style-type: none"> • develop research questions related to health and nutrition. (e.g., favorite lunch foods, number of math mistakes made on days without breakfast). Plan data collection process, determine number needed for samples, and determine means of displaying and analyzing data. Begin investigation. • identify various skills (e.g., playing musical instruments, painting pictures, kicking footballs, and shooting basketballs) different students have acquired. Discuss how practice over time improves performance (e.g., in two weeks increase number of sit-ups from ten to fifteen). Select skills and set up practice schedules. Collect data and evaluate performance before and after practice. • discuss how data can be collected over time and analyzed in various ways. (e.g., How many centimeters in all will our class grow during the year?). Discuss possibilities (e.g., height, weight, circumference of waist, length of feet). Determine two areas of growth to track. Devise tables to keep track of monthly changes in the two areas (e.g., height in centimeters, feet in millimeters). Keep class charts to compare student's monthly growth.

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Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Probability and Statistics (2.8, 2.12, 2.13)</p> <p>Writing (1.11)</p>	<p>How does probability affect outcomes?</p>	<p>Students will Mathematics</p> <ul style="list-style-type: none"> • use counting techniques and/or tables to explore probability experiments. • make predictions to determine the fairness of possible outcomes of simple probability experiments. <p>English/Language Arts</p> <ul style="list-style-type: none"> • apply writing-to-learn and writing-to-demonstrate-learning strategies. 	<p>Students will</p> <ul style="list-style-type: none"> • identify probability of selecting certain color sucker from a bag filled with suckers of various colors. (e.g., One sucker for each child, count exact number of each color before selection begins. As each child selects sucker describe chances of selecting favorite flavor using probability vocabulary: certain, likely, chance, unlikely, impossible. Do not replace suckers. Identify how probability of choosing favorite flavor changes.). Display probability meter to visually demonstrate the chances.

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Health and Personal Wellness

Grade 4 Interdisciplinary Model Health

Sample Extensions for Diverse Learners

Cory is a paraplegic due to a car accident at age five. He uses a motorized wheelchair. In order to build his upper body strength and to decrease the possibility of atrophy, Cory will develop a fitness survey and collect information regarding upper body conditioning. He will work with a nondisabled partner to develop the survey and a report that is inclusive of other physical needs of individuals with disabilities. In order to visit a fitness center, he uses his special transportation which includes a lift (*Types of extensions: purpose and appropriateness, resources and materials, motivation, environment, level of support*).

Martin, Shelby, Marla, and Cole enjoy books. However, they have difficulty remembering what they have read and analyzing complex text to understand the main idea. They need multiple opportunities to learn new language and understand new concepts. To assist the students with their reading assignments, they are taught specific strategies for reading (e.g., developing guided reading questions; graphic organizers; story mapping; retrieval strategies; context clues such as description, compare and contrast, familiar expression, synonym, example, and definition clues; mnemonics; story grammar techniques; and visual imagery). They will select stories dealing with conflict and resolution matched to their reading level. Prior to assignment they use an anticipation guide to preview what they know and brainstorm with their class synonyms for conflict and resolution. They create a visual image to remind them of these words. They also receive instruction on using story maps to show how characters deal with change. The teacher provides the students with a scaffolded story map to use in their readings (*Types of extensions: order of learning, complexity, magnitude, procedures and routines, resources and materials, level of support, motivation*).

A cluster of students diagnosed as gifted in one or more areas need opportunities learn and apply new and progressively more advanced leadership and interpersonal skills. These students will work with the principal and school nurse to plan, organize, and oversee a school wellness fair (*Types of extensions: purpose and appropriateness, complexity, magnitude, time, environment, procedures and routines, demonstration of knowledge, level of support, participation*).

Cordell and Starla are part of the advanced level fifth grade instructional group in math. Cordell's parents are insurance agents. They will work with the two students to help them learn about the use of probability in determining insurance premiums (probably need for medical care, life expectancy). Cordell and Starla will create charts and graphs to show the impact of smoking, alcohol use, and physical conditions on insurance costs. They will present their findings to the class and/or their math group (*Types of extensions: purpose and appropriateness, complexity, environment, resources and materials, demonstration of knowledge, level of support*).

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Resources

Internet Addresses:

<http://www olen.com/food/> (food site)

<http://www.bennygoodsport.com/food.htm>

<http://www.ganesa.com/Food/Foodpyramid.html>

<http://www.cheshire-med.com/services/dietary/nutrinew/pyramid.html>
(The Food Pyramid)

<http://www.dcpc.nci.nih.gov/5aday> (vegetables and fruits)

<http://www.cspinet.org/> (This one has a kids page with cooking for children and classroom materials)

<http://www.kidsfood.org./> (Kids Food Cyberclub + lesson plans)

<http://ificinfo.health.org/infoedu.htm> (information for educators)

NOTES

Grade 4 Interdisciplinary Model
Earth, Its Physical Environment, and Objects in the Sky

NOTES

Grade 4 Integrated Model

Earth, Its Physical Environment, and Objects in the Sky

Broad-Based Theme:	Earth/Space Science
Content Areas:	Science, Mathematics
Supplemental Content Areas:	English/Language Arts and Humanities (Drama, Visual Arts, Music)

Unit Overview:

In this unit framework, students investigate Earth, its physical environment, and objects in the sky. Sample activities guide students through an inquiry process to find connections among

- weather,
- scientific investigations,
- Earth materials, and
- objects in the sky.

Pages of the unit frameworks are arranged in pairs. On the left page of each pair are guiding questions along with related academic expectations and correlations to the *Program of Studies*. The unit frameworks are organized around guiding questions that direct teachers' choices of activities. Students should be able to answer these questions by the end of the unit framework.

Sample activities for each instructional setting (e.g., whole group, flexible groups, learning centers, independent work) are listed in columns. Activities are aligned horizontally to demonstrate how instruction moves from guided or facilitated learning to independent learning and self-reflection by students. Sample activities are varied to support students' individual learning styles and interests. Students work in appropriate large and small cooperative groups and as independent learners. While sample activities address *Program of Studies* content, they are not intended to be comprehensive. Some content bullets included in the unit frameworks designate skills and processes (e.g., mathematical procedures and computations) that should be taught throughout the year but are not repeated in every framework. (See the *Curriculum and Evaluation Standards for School Mathematics Addenda Series*, National Council of Teachers of Mathematics, for additional activities in mathematics. The *National Science Education Standards* provide more detail and explanations regarding scientific inquiry, conceptual understandings, and applications/connections.) Teachers are responsible for planning instruction that includes appropriate extensions for unit framework activities to address the interests, needs, and abilities of all students including gifted and talented, children with disabilities, and those with limited English proficiency.

Guiding Questions:

- What natural processes create observable changes on Earth?
- What makes up the Earth?
- What patterns of movement are found in the sky and how does it affect my life on Earth?
- How does magnetism, electricity, heat, light, and sound affect my life?
- How can I use measurement to solve problems in everyday situations?

Grade 4 Interdisciplinary
Earth, Its Physical Environment, and Objects in the Sky

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.1-2.6)</p> <p>Speaking/Listening/Observing (1.3, 1.4, 1.12)</p> <p>Reading (1.2)</p> <p>Writing (1.11)</p> <p>Inquiry (1.1)</p> <p>Drama (2.22 - 2.26)</p>	<p>What natural processes create observable changes on Earth?</p>	<p>Students will understand that Science</p> <ul style="list-style-type: none"> • weather changes. • Earth's materials are solids, water, and gases. • Earth's surface changes are slow and rapid. • Earth's materials have different physical and chemical properties. <p>All <i>Program of Studies</i> Scientific Inquiry bullets are included in this guiding question.</p> <p>Students will</p> <ul style="list-style-type: none"> • examine the role science plays in everyday life. <p>Arts and Humanities</p> <ul style="list-style-type: none"> • create dramatic works using the elements of drama. • demonstrate various types of drama (e.g., improvisation, mimicry, pantomime, role-playing, storytelling). <p>English/Language Arts.</p> <ul style="list-style-type: none"> • understand and respond to a variety of reading materials. • use context vocabulary and comprehension strategies. • identify and apply characteristics of effective writing. • apply writing-to-learn and writing-to-demonstrate-learning strategies. • write transactive pieces. • write personal pieces. • identify information to address student-developed questions. 	<p>Students will</p> <ul style="list-style-type: none"> • discuss natural and human events that have lasting effects on the Earth's surface. Investigate changes to the Earth's surface through scientific inquiry. Explore process of scientific inquiry. Include question development; use of simple tools; use of evidence and explanations; experimental design; communication of designs, procedures and results; and review. • discuss processes that affect soils and water. Explore the importance of soils and water in their lives. • communicate with local meteorologists to discuss the use of weather maps and study of meteorology. Create class weather stations. Determine what instruments (e.g., weather vanes, windsocks) should be developed, organize materials, and assign tasks. <p style="text-align: right;"><i>Continued on page 26</i></p>

Grade 4 Interdisciplinary Model

Earth, Its Physical Environment, and Objects in the Sky

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> investigate how weather affects the Earth's surface. Determine questions to be asked and methods for gathering data. Develop tables to organize data. Interpret data. Examine patterns and trends. Create graphs. Develop multimedia presentations. evaluate soil properties (e.g., color, texture) in different locations throughout their community. Explore classifications of soils in soil surveys. Discuss soils in their community with agricultural extension agents. create videotapes that communicate the purpose of the weather study and study methods. Demonstrate use of instruments in weather stations and how to collect, record, and analyze data. 	<p>Students will</p> <ul style="list-style-type: none"> respond to various reading materials that describe how natural events affect the Earth's surface. Explore how different parts of the world respond to weather emergencies. Develop articles describing how people help each other during and after natural disasters. design investigations using water, soil, and rocks to discover the short- and long-term effects of erosion. Find examples of erosion in their community. Create encyclopedia entries to explain the process and evaluate situations in which erosion has occurred. make instruments for weather stations (e.g., rain gauge, thermometer, wind gauge, barometer, weather vanes). Gather and analyze data. Describe patterns in data. Develop ways to represent data. Prepare multimedia presentations highlighting data collected at the weather station. 	<p>Students will</p> <ul style="list-style-type: none"> investigate how humans have altered the Earth's surface. Describe situations in their community where the physical environment has been altered (e.g., strip mining, home building). Create photo journals accompanied by audiotapes that describe changes. take pictures, collect artifacts, or gather data that show the decay of leaves, food, or trees. Investigate the connections between soils and decomposition. Explore what the world would be like without decomposers. Illustrate the role of decomposition in food and mineral cycles. Present to class and question peers. develop booklets on how to run a weather station. Illustrate with diagrams of student-made instruments. Include annotated selections of weather data. 	<p>Students will</p> <ul style="list-style-type: none"> develop land-use planning booklets to describe how communities can protect the physical environment and still meet citizens needs. write stories from the perspective of insects or earthworms describing the process of decomposition and why it is important. analyze data collected from other sources (e.g., newspapers, magazines). Create visual representation of data and include explanations. Write weather broadcasts for morning announcements.

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Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.1-2.6)</p> <p>Speaking/Listening/Observing (1.3, 1.4, 1.12)</p> <p>Reading (1.2)</p> <p>Writing (1.11)</p> <p>Inquiry (1.1)</p> <p>Drama (2.22 - 2.26)</p>	<p><i>Continued from page 24</i></p> <p>What natural processes create observable changes on Earth?</p>	<p>Students will understand that Science</p> <ul style="list-style-type: none"> • weather changes. • Earth's surface changes are slow and rapid. <p>All <i>Program of Studies</i> Scientific Inquiry bullets are included in this guiding question.</p> <p>Students will</p> <ul style="list-style-type: none"> • examine the role science plays in everyday life. <p>Arts and Humanities</p> <ul style="list-style-type: none"> • create dramatic works using the elements of drama. • demonstrate various types of drama (e.g., improvisation, mimicry, pantomime, role-playing, storytelling). <p>English/Language Arts.</p> <ul style="list-style-type: none"> • understand and respond to a variety of reading materials. • use contextual vocabulary and comprehension strategies. • identify and apply characteristics of effective writing. • apply writing-to-learn and writing-to-demonstrate-learning strategies. • write transactive pieces. • write personal pieces. • identify information to address student-developed questions. 	<p>Students will</p> <ul style="list-style-type: none"> • explore characteristics of air. Investigate what makes the wind blow. Develop poetry or dramatic interpretations to describe how wind affects objects in their community. Use various types of drama (e.g., improvisation, mimicry, pantomime, role-playing, storytelling).

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Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • use balloon and bottle to demonstrate effect of heated air. Place balloon on bottle and heat air inside bottle. Write journal entries describing effects of heated air on balloons. Compare to real examples of heated air. 	<p>Students will</p> <ul style="list-style-type: none"> • explore the history of ballooning. Investigate current attempts by balloonists to circumnavigate the Earth. Investigate effects of wind and weather patterns on balloons path. Write letters or e-mail balloonist to gather scientific and personal information about their trips. 	<p>Students will</p> <ul style="list-style-type: none"> • design and create hot air balloons using tissue paper. Heat air with dryers. Investigate ways to control balloons' direction. Conduct competitions to determine best designs. 	<p>Students will</p> <ul style="list-style-type: none"> • describe situations in their homes or schools where a knowledge of how heated air behaves is important. Share with class.

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Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.1-2.6)</p> <p>Reading (1.2)</p> <p>Writing (1.11)</p> <p>Inquiry (1.1)</p> <p>Music (1.14, 2.22, 2.26)</p>	<p>What makes up the Earth ?</p>	<p>Students will understand that Science</p> <ul style="list-style-type: none"> • Earth’s materials are solids, water, and gases. • fossils provide evidence. • Earth’s materials have different physical and chemical properties. • materials can exist in different states. <p>All <i>Program of Studies</i> scientific inquiry bullets are included in this guiding question.</p> <p>Students will</p> <ul style="list-style-type: none"> • use science to design technological solutions to problems. <p>English/Language Arts</p> <ul style="list-style-type: none"> • employ reading strategies. • use contextual vocabulary and comprehension strategies. • identify and apply characteristics of effective writing. • apply writing-to-learn and writing-to-demonstrate-learning strategies. • identify information to address student-developed questions. • use technology as a research tool. <p>Arts and Humanities</p> <ul style="list-style-type: none"> • use elements of music. • analyze how elements of music are used in performing, listening to, and/or creating music. 	<p>Students will</p> <ul style="list-style-type: none"> • use hot plates to heat substances (e.g., water, paraffin, cube of sugar, butter). Describe in journals the physical changes that occur as matter changes states. Predict what will happen as substances are cooled. Compare these processes to Earth processes. • observe collections of fossils. Discuss different types of fossils, speculating where they may have been found. Explore formation of sedimentary rocks. Make stratigraphy cups by layering sand and fossils. Compare stratigraphy cups to rock layers of the Earth. • discuss composition of sand, soil, and rocks. Use simple tools (e.g., hand lens) to investigate properties of Earth’s materials. Sort materials by properties.

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Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> observe glass with ice water and glass with warm water. Compare properties. Describe other examples of water in gaseous state. Design method of keeping water cold or warm. Discuss strategies with peers. participate in field trips to explore fossils in their communities. Draw illustrations of fossils and the rock layer sequences. gather information about Earth materials that make up different geographic areas or regions of the Earth (e.g., Arctic Circle). Compare to Earth's materials in their state. 	<p>Students will</p> <ul style="list-style-type: none"> brainstorm lists of materials that can be presented in forms or states different from that in which they are normally found. Choose three materials from list and prepare museum displays of their unusual form or state. Create signs inviting visitors to identify materials in the museum. employ reading strategies (e.g., contextual vocabulary, and comprehension strategies) when reading about the process of making fossils. Write lyrics to familiar melodies, including as many facts as possible. Use rap, rock, or original melodies. Analyze how elements of music are used. test effects of various liquids (e.g., lemon juice, vinegar, seltzer water) on different materials (e.g., metal, wood, glass). Record and compare observations. Describe how acid rain affects the Earth. 	<p>Students will</p> <ul style="list-style-type: none"> write riddles, jokes, magic tricks, and poems that describe states of matter. Compile pieces into science-literary booklets. use technology to investigate how geologists categorize fossils. Determine skills needed to be a geologist. Write how-to booklets describing how geologists classify fossils. research information about various minerals that come from the Earth. Develop charts describing how the minerals are used, where they come from and how they formed. 	<p>Students will</p> <ul style="list-style-type: none"> write textbook entries explaining what must be done to matter to make it change states. Include illustrations and descriptions of physical changes. sort and classify collections of Earth materials. Provide rationale for classification systems. write paragraphs from the point of view of various Earth components (e.g., coal, oil, rock, sand, soil) describing how they were made and identify how used.

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Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.1-2.6)</p> <p>Reading (1.2)</p> <p>Writing (1.11)</p> <p>Inquiry (1.1)</p> <p>Visual Arts (1.13, 2.22, 2.26)</p> <p>Music (1.14, 2.22, 2.26)</p> <p>Drama (2.22 - 2.26)</p>	<p>What patterns of movement are found in the sky and how does it affect my life on Earth?</p>	<p>Students will understand that Science</p> <ul style="list-style-type: none"> • the Sun provides light and heat. • common objects in the sky can be observed and described. • objects in the sky have patterns of movement. • the position and motion of an object can be described. <p>All <i>Program of Studies</i> scientific inquiry bullets are included in this guiding question.</p> <p>Students will</p> <ul style="list-style-type: none"> • use science to design technological solutions to problems. <p>Arts and Humanities</p> <ul style="list-style-type: none"> • use a variety of media and art processes to produce two- and three-dimensional works of art. • use music elements. • create dramatic works using the elements of drama. <p>English/Language Arts</p> <ul style="list-style-type: none"> • select and read materials for enjoyment. • respond to a variety of reading materials. • use information from various sources to produce writing. • apply writing-to-learn and writing-to-demonstrate-learning strategies. 	<p>Students will</p> <ul style="list-style-type: none"> • observe the day sky regularly to identify patterns. Record position of Sun on diagram of school grounds during one day of the week for two-month period (e.g., observe once every hour, repeat during different seasons). Discuss patterns of changes in the sky, describing position and motion of objects. Read poetry that describes movement of objects in the sky. • record position of Sun and the movement of shadows during the course of the day. Measure length of shadows, record on graphs, and communicate patterns of movement. Explain procedures and results. Review and ask questions about investigations. <p style="text-align: right;"><i>Continued on page 32</i></p>

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Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • use various resources to investigate objects in the sky. Design songs, poetry, or dramatic representations describing objects, properties, location, and their movement. Explore elements of music and drama when creating songs and dramatic representations. • observe apparent motion of Sun by taping black construction paper with pin hole in center to sunny window in darkened room. Place white cardboard three feet from window so that Sun shines through pin hole onto cardboard. Observe for several minutes and extrapolate what path the Sun's image would make from sunrise to sunset on the paper. 	<p>Students will</p> <ul style="list-style-type: none"> • read <i>Good Night Moon</i> and observe illustrations of moon phases. Develop similar story line for book illustrating other patterns of movement in the sky. • design models of objects in sky and describe their patterns of movement on chart paper to display on school walls (e.g., stars, day and night, planets, moon phases, seasonal changes). 	<p>Students will</p> <ul style="list-style-type: none"> • observe and describe the moon's cycle during one month. Record data (e.g., draw shape). Identify the sequence of change and pattern developed. Predict the next month's phases. Explain predictions in science journals. • investigate stars as homework assignment. Select a star in the sky on clear night. Line up star with top of tree or pole. Repeat observation every ten minutes from same spot. Illustrate and describe in science journals pattern of movement. 	<p>Students will</p> <ul style="list-style-type: none"> • graph sunrise and sunset times for period of ten days. Predict sunrise and sunset times from data for each day of following week. Verify predictions. • write articles to describe one object in the sky, its pattern of movement, and its impact on life on Earth.

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Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.1-2.6)</p> <p>Reading (1.2)</p> <p>Writing (1.11)</p> <p>Inquiry (1.1)</p> <p>Visual Arts (1.13, 2.22, 2.26)</p> <p>Music (1.14, 2.22, 2.26)</p>	<p><i>Continued from page 30</i></p> <p>What patterns of movement are found in the sky and how does it affect my life on Earth?</p>	<p>Students will understand that Science</p> <ul style="list-style-type: none"> • the Sun provides light and heat. • common objects in the sky can be observed and described. • objects in the sky have patterns of movement. • the position and motion of an object can be described. <p>All <i>Program of Studies</i> scientific inquiry bullets are included in this guiding question.</p> <p>Students will</p> <ul style="list-style-type: none"> • use science to design technological solutions to problems. <p>Arts and Humanities</p> <ul style="list-style-type: none"> • use a variety of media and art processes to produce two- and three-dimensional works of art. • use music elements. • create dramatic works using the elements of drama. <p>English/Language Arts</p> <ul style="list-style-type: none"> • select and read materials for enjoyment. • respond to a variety of reading materials. • use information from various sources to produce writing. • apply writing-to-learn and writing-to-demonstrate-learning strategies. 	<p>Students will</p> <ul style="list-style-type: none"> • brainstorm uses of solar energy. Identify what distilled water is and how it is used. Build distiller that uses solar energy. Create multimedia presentations illustrating design, use, and results.

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Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • read <i>The Island of the Blue Dolphin</i> identifying and describing how Sun's energy was used to solve problems. 	<p>Students will</p> <ul style="list-style-type: none"> • investigate use of solar energy as cooking source. Use various resources (e.g., box, aluminum foil, steel rod, watch) to design solar oven. Cook hot dogs and describe results. Explore other uses of solar cooker. Explain advantages and disadvantages. 	<p>Students will</p> <ul style="list-style-type: none"> • design idea for more efficient solar cooker (e.g., add mirrors, reflecting panels, more panels at wider angles). Develop advertisements to describe how solar cooker is more efficient and explain why in advertisements. 	<p>Students will</p> <ul style="list-style-type: none"> • write articles explaining what regions of the world could use solar energy as a major energy source. Compare use of solar energy to use of fossil fuels. Explain benefits of solar energy. Present findings to class.

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Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.1-2.6)</p> <p>Speaking/Listening/Observing (1.3, 1.4, 1.12)</p> <p>Writing (1.11)</p> <p>Music (1.14, 2.22, 2.26)</p>	<p>How does magnetism, electricity, heat, light, and sound affect my life?</p>	<p>Students will understand that Science</p> <ul style="list-style-type: none"> • magnets attract and repel. • electrical currents move through electrical circuits. • heat can move from one object to another. • light travels in a straight line. • sounds are caused by vibrating objects. <p>All <i>Program of Studies</i> scientific inquiry bullets are included in this guiding question.</p> <p>Students will</p> <ul style="list-style-type: none"> • examine the role science plays in everyday life. <p>English/Language Arts</p> <ul style="list-style-type: none"> • utilize text features and organizational patterns in reading materials. • write transactive pieces. • apply writing-to-learn and writing-to-demonstrate-learning strategies. • recognize purpose and effectiveness of messages. • apply listening, speaking, and observing skills. • prepare and deliver formal presentations. • use technology to access information. <p>Arts and Humanities</p> <ul style="list-style-type: none"> • recognize and develop music elements. • use appropriate terminology to describe purpose of music elements. 	<p>Students will</p> <ul style="list-style-type: none"> • compare magnets of different size and shape to observe magnetic fields. Cover magnet with cardboard, glass, or plastic. Punch holes in lid of jar, fill with iron filings, and sprinkle evenly over the magnet covering. Tap the covering gently. Draw patterns formed and discuss observations. • explore how magnets are used in compasses. Discuss observations with class and chart findings. • demonstrate that light travels in straight lines by using a single light source (e.g., overhead projector, single light bulb) to create shadows. Explain how this phenomenon is similar to shadows created by the Sun. <p style="text-align: right;"><i>Continued on page 36</i></p>

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Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • explore properties of magnets. Observe patterns of repulsion and attraction. Discuss findings with class. 	<p>Students will</p> <ul style="list-style-type: none"> • design investigations to compare strengths of magnets, record data, and draw conclusion. Present findings to class. 	<p>Students will</p> <ul style="list-style-type: none"> • explore use of magnets in everyday life (e.g., trains, motors, microphones, speakers). Develop informational booklets on magnets and their uses. 	<p>Students will</p> <ul style="list-style-type: none"> • use magnets to determine which classroom objects contain iron or steel. Prepare lists of objects.
<ul style="list-style-type: none"> • tie both ends of bar magnet with string keeping magnet away from metal objects. Allow magnet to rotate fully. Observe alignment of magnets with Earth. Explain in science journals why magnets all align in the same direction. 	<ul style="list-style-type: none"> • use various resources (e.g., textbooks, Internet) to gather information about the Earth's magnetic field and poles. Identify the way compasses work. Prepare demonstrations to share with peers. 	<ul style="list-style-type: none"> • choose destination within school building where a prize might be hidden. Walk toward the chosen spot, using the compass to determine which direction they are heading. Record in science journals each change of direction. Challenge teams of peers to follow directions and find the prize. 	<ul style="list-style-type: none"> • solve the following problem: Imagine you are lost in the woods without a compass. You know that your camp site is due south. You have a bar magnet in your backpack. Develop a plan that includes the use of the magnet to find your way to the camp site.
<ul style="list-style-type: none"> • prepare demonstrations for younger students to explain properties of light. 	<ul style="list-style-type: none"> • explore reflection and refraction of light. Use mirrors to change direction of light. Compare images formed from flat mirrors with those formed by curved mirrors or lens. 	<ul style="list-style-type: none"> • determine which lens would be best for eyeglasses. Develop brochures to be distributed at physicians office or health department explaining how lens refract light and help people see better. 	<ul style="list-style-type: none"> • write articles describing how lenses are used in everyday life (e.g., glasses, cameras, mirrors).

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<p>Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.1-2.6)</p> <p>Speaking/ Listening/ Observing (1.3, 1.4, 1.12)</p> <p>Writing (1.11)</p> <p>Music (1.14, 2.22, 2.26)</p>	<p><i>Continued from page 34</i></p> <p>How does magnetism, electricity, heat, light, and sound affect my life?</p>	<p>Students will understand that Science</p> <ul style="list-style-type: none"> • magnets attract and repel. • electrical currents move through electrical circuits. • heat can move from one object to another. • light travels in a straight line. • sounds are caused by vibrating objects <p>All <i>Program of Studies</i> Scientific Inquiry bullets are included in this guiding question.</p> <p>Students will</p> <ul style="list-style-type: none"> • examine the role science plays in everyday life. <p>English/Language Arts</p> <ul style="list-style-type: none"> • write transactive pieces. • apply writing-to-learn and writing-to-demonstrate-learning strategies. <p>Arts and Humanities</p> <ul style="list-style-type: none"> • recognize and develop music elements. • use appropriate terminology to describe purpose of music elements. 	<p>Students will</p> <ul style="list-style-type: none"> • discuss electrical appliances used frequently at home and dramatize ways task could be performed without electricity. • participate in class discussions about how heat is important in their life. <p style="text-align: right;"><i>Continued on page 38</i></p>

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Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • use batteries, bulbs, and wires to make bulbs light. Investigate ways to make light brighter. • investigate heat conduction using various materials (e.g., plastic spoon, metal spoon, wooden spoon). Heat small amount of water up to 50 degrees Celsius on hot plate. DO NOT BOIL WATER. Place spoons in water. Touch end of spoons to determine which becomes hot first. 	<p>Students will</p> <ul style="list-style-type: none"> • test various materials to identify conductors of electricity. Sort and classify materials. Chart results. • investigate methods of keeping cups of hot chocolate warm. Design product to cover cup. Present product to class, identifying how product works. 	<p>Students will</p> <ul style="list-style-type: none"> • draw diagrams to represent a closed electric circuit. Describe the path of the electricity from the time it leaves the battery until it returns to the battery. • fill an aluminum cup and a china cup with very hot water. Touch the handles to compare heat flow through aluminum and china. 	<p>Students will</p> <ul style="list-style-type: none"> • determine what is wrong with circuits (e.g., flashlight with missing battery or light bulb). Describe in science journals. • identify solution to the problem: You are trying to heat soup quickly. You have a metal pan, ceramic pan, and a copper pan. Explain in science journals which would be the best choice.

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<p>Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.1-2.6)</p> <p>Speaking/Listening/Observing (1.3, 1.4, 1.12)</p> <p>Writing (1.11)</p> <p>Music (1.14, 2.22, 2.26)</p>	<p><i>Continued from page 40</i></p> <p>How does magnetism, electricity, heat, light, and sound affect my life?</p>	<p>Students will understand that Science</p> <ul style="list-style-type: none"> • magnets attract and repel. • electrical currents move through electrical circuits. • heat can move from one object to another. • light travels in a straight line. • sounds are caused by vibrating objects. <p>All <i>Program of Studies</i> Scientific Inquiry bullets are included in this guiding question.</p> <p>Students will</p> <ul style="list-style-type: none"> • examine the role science plays in everyday life. <p>English/Language Arts</p> <ul style="list-style-type: none"> • write transactive pieces. • apply writing-to-learn and writing-to-demonstrate-learning strategies. <p>Arts and Humanities</p> <ul style="list-style-type: none"> • recognize and develop music elements. • use appropriate terminology to describe purpose elements of music. 	<p>Students will</p> <ul style="list-style-type: none"> • investigate a variety of sounds (e.g., banjo plucking, drum beating, paper tearing, silverware tapping, pencil falling, bells playing, rock dropping, piano playing, whistle blowing, harmonica playing, guitar strumming, cellophane crinkling). <p>Organize information about sounds in tables. Devise sets of categories (e.g., objects that make continuing sounds) and subcategories (e.g., objects that make sounds of short duration) for the sound makers. Use descriptive words to describe the sounds.</p>

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Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> investigate vibrations as the way sound is produced. Describe what is felt, heard, and seen in the following activities: Fasten rubber band to door knob, pull it taut, then pluck it. Touch strings of instrument as they are played. Fill a drinking glass half way with water, wet finger, and rub around edge of glass. 	<p>Students will</p> <ul style="list-style-type: none"> stretch three rubber bands of the same length and different width around a small wooden box. Pluck each band, one at a time, while listening. Describe how sounds differ. Record findings in tables. 	<p>Students will</p> <ul style="list-style-type: none"> identify which musical instruments would be most appropriate to enhance children's stories. Work with partners to re-tell story using instruments to complement plot. Identify elements of music (e.g., rhythm, melody, tempo, dynamics) used and how they helped create emotions. 	<p>Students will</p> <ul style="list-style-type: none"> listen to tape-recorded sounds. Use graphic organizers to analyze the following characteristics: <ul style="list-style-type: none"> - pitch (e.g., high and low) - duration (e.g., length and rhythm) - quality (e.g., timbre) - volume (e.g., loud, soft, dynamics)

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Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Measurement (2.10)</p> <p>Number Computation (2.7)</p> <p>Writing (1.11)</p> <p>Problem Solving (5.5)</p>	<p>How can I use measurement to solve problems in everyday situations?</p>	<p>Students will</p> <p>Mathematics</p> <ul style="list-style-type: none"> • relate time to days, weeks, months, and years. • add subtract time. • read and record temperature to nearest degree. • measure and find area and perimeter of rectangle. • measure and find perimeter of regular and irregular shapes. • exchange units within a measurement system. • computational procedures for, +, -, x, /. <p>English/Language Arts</p> <ul style="list-style-type: none"> • apply writing-to-learn and writing-to-demonstrate-learning strategies. • prepare and deliver formal presentations. 	<p>Students will</p> <ul style="list-style-type: none"> • listen to <i>Nine O’Clock Lullaby</i> to identify time zones. Locate time zones in various places using United States and world maps. Find differences between two or more time zones. Divide into groups and use clocks to determine the appropriate time in their area to call people in countries identified in <i>Nine O’Clock Lullaby</i>. • use cubes and grid paper to find multiple solutions to everyday problems. Moses’s dog food comes in a 2 cm³ can. He eats one can per day. Use grid paper to construct jackets that will cover the can. Make jackets for larger cans that contain enough food for two and three days. Determine area and perimeter of each jacket. Create tables to organize data.

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Earth, Its Physical Environment, and Objects in the Sky

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • record estimates on time required to do five common tasks (e.g., bathing, brushing teeth, practicing piano, math homework, washing dishes, cleaning room). Gather actual data on the same five tasks at home. Solve problems (e.g., If you were responsible for completing each of these five tasks before eating dinner at 6:00, what time would you need to begin the tasks? Describe in science journals procedures for solving problems. • investigate ways to wrap cans that supply six days of food. Explore cost efficient ways to wrap cans. Devise grocery store displays in various geometric shapes. 	<p>Students will</p> <ul style="list-style-type: none"> • create a new system for measuring time on an unknown planet. Compare to the Earth time system that uses seconds, minutes, hours, days, weeks, months, and years. Explain units of time in class presentations. • use twelve color tiles to represent picnic tables. Each tile must touch another tile along one side. Determine the arrangement of tiles that will seat the most and the fewest friends at a picnic, if only one friend can be seated per side of each table. Investigate all possible arrangements. Determine the number of picnickers that each arrangement will seat. Display data. 	<p>Students will</p> <ul style="list-style-type: none"> • state birthday and age. Determine number of months, days, and hours they have been alive. Explain solutions in science journals. • create picnic table arrangements that will seat fourteen friends. Use color tiles to represent tables. Only one person is seated on each side. Tables must touch on one side. Display information showing area and perimeter of each table arrangement. 	<p>Students will</p> <ul style="list-style-type: none"> • use various methods to determine their age on July 4, 2010 (e.g., calculators, mental math, pencil and paper, calendars). • explain in math journals how problems involving perimeter and area are solved.

Grade 4 Interdisciplinary Model

Earth, Its Physical Environment and Objects in the Sky

Sample Extensions for Diverse Learners

Casey, Meryl, and Cliff enjoy working with manipulatives, constructing new projects, and investigating new information. They need additional instruction on understanding relationships between math and daily life, retrieving math facts more efficiently, and strategies for solving word problems. Casey, Meryl, and Cliff visit a local meteorologist to determine how meteorologists use math in their jobs. They create math problems with the meteorologist via e-mail (e.g., change in temperature, barometric pressure) using the algorithms they are learning. Casey, Meryl, and Cliff construct a flowchart using symbols to show their classmates how to solve the problems (*Types of extensions: purpose and appropriateness, complexity, procedures and routines, environment, resources and materials, participation, demonstration of knowledge*).

Jeff has advanced level reasoning skills, is highly motivated and has his own high powered telescope at home. He keeps a scientific journal recording nightly observations of objects in the sky, researches his findings using Internet and other resources. He presents his findings to class on a weekly basis (*Type of extensions: magnitude, environment, demonstration of knowledge*).

Keran has intermediate listening and speaking skills in English and beginning reading and writing skills. Keran will work with a peer to develop how-to manuals for the weather station instruments in English and his native language. He will act as a coach for the class in learning his native-language words for the weather patterns studied, as the class assists him in learning the English version of the words. His teachers use the Cognitive Academic Language Approach (CALA), anticipation guides for reading, and scaffolding, reading, writing workshop and Reader's Theatre strategies (*Types of extensions: purpose and appropriateness, magnitude, order of learning, procedures and routines, resources and materials, level of support, participation, motivation*).

As students with exceptional creative thinking and problem solving abilities, Jeremy and Marianne need opportunities to develop their fluency, and creativity. They will generate lists of possible uses of magnets and design and construct an original use for a magnet or a contraption that accomplishes a task in a series of steps, each requiring a magnet. They will create posters explaining their project for display at a local business (*Types of extensions: purpose and appropriateness, magnitude, complexity, motivation, demonstration of knowledge, participation, time, materials and resources, level of support*).

Myra's teacher uses assisted reading (e.g., lap method, neurological impress method), repeated reading of highly predictable books, and sustained silent reading to improve her fluency. For example, the teacher models fluent reading by reading a familiar predictable book or one chosen by Myra. During the second reading, Myra reads along as the teacher re-reads the text. In the learning center, she reads along with books on tape. She uses technology that allows her to hear herself and the text as she reads. Myra participates in Readers Theatre. Her teacher uses free writing, journal writing, and written conversation to improve her writing fluency. She reads books on earth and space (*Types of extensions: purpose and appropriateness, order of learning, procedures and routines, resources and materials, environment, participation, motivation*).

Grade 4 Interdisciplinary Model
Earth, Its Physical Environment, and Objects in the Sky

Resources

Internet Addresses:

<http://www.earthballoon.com/resource.htm> (Earth Awareness Educational Resources)

<http://www.planet.com/dirtweb/dirt.html> (At the Museum of Dirt)

<http://www.nap.edu/readingroom/books/nses/html/> (National Science Education Standards)

<http://www.newscientist.com/> (New Scientist Planet Science)

<http://www.nature.com/> (Nature)

<http://www.fourmilab.ch/solar/solar.html> (Solar System Live)

<http://www.earthsky.com> (Earth & Sky)

<http://bang.lanl.gov/solarsys/> (Solar System)

<http://photojournal.jpl.nasa.gov/> (Planetary Photojournal Website: allows user to access almost all of the images taken of the planets by past and current NASA planetary missions)

<http://www.hq.nasa.gov/office/oss/> (NASA Office of Space Science Homepage)

<http://dlt.gsfc.nasa.gov/Ask/> (Ask Dr. Sue -On-line astronomers answer kids' questions)

<http://www.jpl.nasa.gov/index/> (See Children's Stories: Galileo at Jupiter and A Little Rock on M)

NOTES

**Grade 4 Interdisciplinary
Pond Study**

NOTES

Grade 4 Interdisciplinary Model Pond Study

Broad-Based Theme:	Ponds
Content Area:	Science
Supplemental Content Areas:	English/Language Arts, Arts and Humanities (Drama, Visual Arts, Music), Mathematics

Unit Framework Overview:

In this unit framework, students identify interactions among organisms in a pond. Sample activities guide students through an inquiry process to

- observe, collect, organize, and analyze information about interactions among living and nonliving organisms; and
- explore ecosystems, habitats, and communities to determine how biotic and abiotic factors influence each other.

Pages of the unit framework are arranged in pairs. On the left page of each pair are guiding questions along with related academic expectations and correlations to the *Program of Studies*. Unit frameworks are organized around guiding questions that direct teachers' choices of activities. Students should be able to answer these questions by the end of the unit framework.

Sample activities for each instructional setting (e.g., whole group, flexible groups, learning centers, independent work) are listed in columns. Activities are aligned horizontally to demonstrate how instruction moves from guided or facilitated learning to independent learning and self-reflection by students. Sample activities are varied to support students' individual learning styles and interests. Students work in appropriate large and small cooperative groups and as independent learners. While sample activities address *Program of Studies* content, they are not intended to be comprehensive. Some content bullets included in the unit frameworks designate skills and processes that should be taught throughout the year (e.g., mathematical procedures and computations) but are not repeated in every unit framework. (See the *Curriculum and Evaluation Standards for School Mathematics Addenda Series*, National Council of Teachers of Mathematics, for additional activities in mathematics. The *National Science Education Standards* provide more details and explanations regarding scientific inquiry, conceptual understandings, and applications/connections.) Teachers are responsible for planning instruction that includes appropriate extensions for unit framework activities to address the interests, needs, and abilities of all students including gifted and talented, children with disabilities, and those with limited English proficiency.

Guiding Questions:

- What are the components of ecosystems, and how are they interdependent?
- How are the life cycles of aquatic organisms similar?
- How can I use measurement tools to help me solve problems?
- How are fractions and decimals used to represent numbers?

Grade 4 Interdisciplinary Model Pond Study

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.1-2.6)</p> <p>Writing (1.11)</p> <p>Productive Team Membership (4.2)</p> <p>Inquiry (1.1)</p> <p>Drama (2.22 - 2.26)</p>	<p>What are the components of ecosystems, and how are they interdependent?</p>	<p>Students will understand that Science</p> <ul style="list-style-type: none"> • organisms have basic needs. • behavior is influenced by stimuli. • organisms have different structures that serve different functions. • organisms' patterns of behavior are related to the environments. • all animals depend on plants. • organisms change the environment. • properties of materials can be used. <p>All <i>Program of Studies</i> Scientific Inquiry bullets are included in this guiding question.</p> <p>Students will</p> <ul style="list-style-type: none"> • examine the role science plays in everyday life. • describe the role of science and technology in local issues. <p>English/Language Arts</p> <ul style="list-style-type: none"> • understand and respond to a variety of reading materials. • use technology as a research tool. • take notes from research. • identify information to address student-developed questions. • write transactive pieces. • apply writing-to-learn and writing-to-demonstrate-learning strategies. • identify and apply characteristics of effective writing. • use technology to access ideas and information. • write literary pieces. • prepare and deliver formal presentations. <p>Arts and Humanities</p> <ul style="list-style-type: none"> • create simple dramatic works using the elements of drama. 	<p>Students will</p> <ul style="list-style-type: none"> • directly observe and investigate an ecosystem. Draw and label components of a pond ecosystem. Compare drawings. Develop charts describing components. Visit one pond during different seasons to observe change over time. Visit multiple ponds to compare characteristics of each. <ul style="list-style-type: none"> • investigate interactions within pond ecosystems. Discuss needs of various organisms. Develop paragraphs and diagrams to illustrate energy flow in pond ecosystems. Develop dramatization using the elements of drama to reenact interactions.

Grade 4 Interdisciplinary Model

Pond Study

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> participate in mini-lessons where skills that will be used in pond investigations are demonstrated (e.g., use of thermometers, magnifiers). Measure physical properties of water (e.g., temperature). Investigate organisms living in pond ecosystem. Create tables to organize data. Draw and label organisms observed. Describe behaviors of organisms observed. Describe organisms' structures and functions. Tally the number of organisms found in each area of the pond (e.g., bottom, edge). Determine the most and least diverse areas. Discuss reasons for diversity. replicate ecosystems in the classroom. Choose organisms to include. Identify living and nonliving factors of ecosystem. Vary one factor. Record effects on the ecosystem. Observe ecosystem for several weeks. Develop journal entries describing change over time. Develop graphic organizers to compare pond and aquarium ecosystems. 	<p>Students will</p> <ul style="list-style-type: none"> map vegetation along edge of pond. Tally number of plants found. Draw pictures of plants found along edge. Include details of leaves, stems, roots, and flowers. Investigate surfaces of leaves with magnifiers. Determine surface area of leaves. Compare root systems. Identify purposes of each plant structure. Identify adaptations of aquatic plants. Compare plants living in water with those living on land. examine how animals are adapted to their environment. Identify characteristics of aquarium organisms and describe how each adaptation helps the organism survive (e.g., fish have fins, scales, and gills, ducks have webbed feet). Compare adaptations in graphic organizers. 	<p>Students will</p> <ul style="list-style-type: none"> investigate other ecosystems (e.g., cornfields, streams, forests). Draw and label components of each. Create graphic organizers to compare characteristics. investigate how organisms change their environment. Explore and write stories about what happens when there are too many plants or animals living in one area. Predict what would happen in a pond ecosystem if either fish or plants were suddenly removed. Develop flow charts illustrating changes. 	<p>Students will</p> <ul style="list-style-type: none"> develop persuasive writing piece from the viewpoint of one organism in the pond ecosystem. Interview a fish or cattail and describe lifestyles. close eyes and recall sights, sounds, smells, and sensations experienced during pond visit. Write literary pieces (e.g., poems, short stories based on those images. Give attention to the elements of music when creating songs.

Grade 4 Interdisciplinary Model

Pond Study

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.1-2.6)</p> <p>Writing (1.11)</p> <p>Productive Team Membership (4.2)</p>	<p>How are the life cycles of aquatic organisms similar?</p>	<p>Students will understand that Science</p> <ul style="list-style-type: none"> • organisms resemble their parents. • organisms have life cycles. • characteristics of organisms are inherited or learned. <p>All <i>Program of Studies</i> Scientific Inquiry bullets are included in this guiding question.</p> <p>Students will</p> <ul style="list-style-type: none"> • examine the role science plays in everyday life. <p>English/Language Arts</p> <ul style="list-style-type: none"> • apply writing-to-learn strategies and writing-to-demonstrate-learning strategies. • apply listening, speaking, and observing skills. • explore technology as a means of communication. • recognize the purpose and effectiveness of both formal and informal messages. 	<p>Students will</p> <ul style="list-style-type: none"> • observe and compare characteristics of young and adult organisms (e.g., plants, animals, humans). Recognize that organisms' characteristics are inherited from their parents. Identify physical characteristics that are inherited and identify human behaviors (e.g., riding a bike, reading) that are learned, not inherited. Extend activity to identify learned behaviors of other organisms.

Grade 4 Interdisciplinary Model

Pond Study

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> recognize that there are similarities and differences in life cycles of aquatic organisms. Identify in graphic organizers (e.g., charts, Venn diagrams) similarities and differences between life cycles of aquatic animals. Illustrate life cycles of aquatic animals. Discuss why knowing about organisms' lifestyles is important. 	<p>Students will</p> <ul style="list-style-type: none"> maintain and observe populations of aquatic plants and animals (e.g., duckweed, snails, guppies, frogs) in class aquaria. Record changes in population and illustrate life cycles. Share observations in round table discussions and with peers or via e-mail. Discuss effectiveness of different forms of communication. 	<p>Students will</p> <ul style="list-style-type: none"> investigate life cycles of plants. Plant seeds. Grow seedlings to maturity. Observe flowering and pollinating. Compare new seeds to the ones originally planted. Illustrate life cycles and label stages. Identify common characteristics of plant and animal life cycles. 	<p>Students will</p> <ul style="list-style-type: none"> sequence sets of cards that depict stages in life cycle of different organisms. Explain similarities and differences in sequences.

Grade 4 Interdisciplinary Model

Pond Study

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Numbers, Integers, and Place Value, Number Computation (2.7, 2.8, 2.12)</p> <p>Measurement (2.10)</p> <p>Writing (1.11)</p> <p>Inquiry (1.1)</p>	<p>How can I use measurement tools to help me solve problems?</p>	<p>Students will</p> <p>Mathematics</p> <ul style="list-style-type: none"> • draw conclusions based on data. • read and record temperatures to the nearest degree. • exchange units within a measurement system. • pose questions, collect, organize, and display data. • choose appropriate means to collect and organize data. <p>English/Language Arts</p> <ul style="list-style-type: none"> • apply listening, speaking, and observing skills. • identify information to address student-developed questions. • apply writing-to-learn and writing-to-demonstrate-learning strategies. 	<p>Students will</p> <ul style="list-style-type: none"> • place hand in container of water that is room temperature and find objects in room that are colder and hotter. Estimate temperature of other objects. Identify calibrated units on thermometer. Test guesses by measuring water temperature. • develop understanding of volume of water used daily (e.g., the average American person uses 120 gallons of water daily). Devise visual representations using milk jugs. Develop questions they would like answered about water use in their community. Identify resources needed to answer questions.

Grade 4 Interdisciplinary Model

Pond Study

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> experiment with three containers of water: one hot, one cold, one room temperature (e.g., One student will place hand in cold water and one student will place hand in hot water; then each will place same hand in room temperature water to compare what happens). Estimate water temperatures. Measure temperature of water to nearest degree. Measure temperature of other objects. Discuss how to read thermometers and verify temperature predictions. use measuring tools to investigate volume of various containers. Use calibrated cylinders or make calibrated measuring tools using 8 ounce or 240 milliliter cup, permanent marker, and small 20 milliliter cup. Add 20 milliliter cup of water to large cup, mark water level and label. Continuing until water level reaches top. 	<p>Students will</p> <ul style="list-style-type: none"> devise method for determining effects of color on temperature (e.g., use containers of water with various colors and check temperature). Pose questions, collect, organize, and display data. Communicate results and question peers about investigations. use 1/2 pint, pint, or quart containers to identify volume of various containers. Develop graphic organizers to demonstrate number of 1/2 pints, pints, and quarts can be found in a gallon. 	<p>Students will</p> <ul style="list-style-type: none"> design and conduct investigations to determine at what time of the day temperature is highest. solve problems involving measurement. Andre bought 1/2 gallon of milk. He drank two 8 ounce glasses of milk and used 5 ounce on his cereal. How much milk was left in the carton? HINT: 128 ounces = 1 gallon. Explain solution to problem and design other problems Use ounces and gallons. Compile in booklets on problems in measurement. 	<p>Students will</p> <ul style="list-style-type: none"> respond to open-response situations concerning how to design and conduct experiments and analyze results. use calibrated measuring cups and containers of various size and shape to determine capacity of each. Predict which will hold the most; then measure, and devise appropriate ways to display data.

Grade 4 Interdisciplinary Model

Pond Study

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Fractions and Decimals, Number Computation (2.7, 2.8, 2.12)</p> <p>Measurement (2.10)</p> <p>Writing (1.11)</p>	<p>How are fractions and decimals used to represent numbers?</p>	<p>Students will Mathematics</p> <ul style="list-style-type: none"> • explore estimation procedures. • compare unit fractions. • investigate equivalent fractions. • read, write, and identify decimals. • develop equivalent relationships between common fractions, decimals and whole numbers. • add and subtract fractions with common denominators using manipulatives or diagrams. • make predictions to determine the fairness of possible outcomes of simple probability experiments using a variety of appropriate manipulatives. <p>English/Language Arts</p> <ul style="list-style-type: none"> • apply writing-to-learn and writing-to-demonstrate-learning strategies. 	<p>Students will</p> <ul style="list-style-type: none"> • use liter containers to investigate fractional parts. Fill the liter $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{2}{3}$, and $\frac{3}{4}$ of the way with water. Use of common containers to explore fractions. • explore decimal use in everyday life (e.g., odometer, money, thermometer). Use various resources (e.g., newspapers, magazines, books, food packages) to find examples of decimals, recording number and its purpose. Read, write, and identify decimal representations with class. <p style="text-align: right;"><i>Continued on page 54</i></p>

Grade 4 Interdisciplinary Model

Pond Study

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> participate in mini-lessons using collections of objects to identify fractional parts. Using manipulatives, demonstrate equivalent fractions. Record in math journals representations (e.g., pictorial or written explanation) of equivalent fractions. participate in mini-lessons using meter sticks and decimal place value charts to investigate tenths, hundredths, and thousandths. Recognize that decimeters = tenths, centimeter = hundredths, and millimeter = thousandths. Use various manipulatives to investigate decimals. 	<p>Students will</p> <ul style="list-style-type: none"> explore fractions using liter bottles. Devise method of calibrating bottle using one fractional unit (e.g., $\frac{1}{7}$, $\frac{1}{8}$, $\frac{1}{5}$). Design fractional strips to represent fractions with different denominators (e.g., $\frac{3}{5}$ to $\frac{2}{3}$). make fraction, decimal, and bar model cards of same numbers. Play game similar to rummy matching one card from each representation. Write in math journals, decimals, fractions, and pictorial representations for each number. 	<p>Students will</p> <ul style="list-style-type: none"> use pattern block triangle as unit to explore fractional parts of all pattern blocks. Create, draw, and label flip books, demonstrating fractional parts of each pattern block if triangle equals one unit. using pre-made fraction flip book, label each fractional part as decimal. Describe in math journals relationships between fractions and decimals. 	<p>Students will</p> <ul style="list-style-type: none"> develop flip book to determine fractional parts of a hexagon. respond to open-response situations regarding identification and the use of decimals in everyday life.

Grade 4 Interdisciplinary Model

Pond Study

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Fractions and Decimals, Number Computation (2.7, 2.8, 2.12)</p> <p>Measurement (2.10)</p> <p>Writing (1.11)</p>	<p><i>Continued from page 52</i></p> <p>How are fractions and decimals used to represent numbers?</p>	<p>Students will</p> <p>Mathematics</p> <ul style="list-style-type: none"> • explore estimation procedures. • compare unit fractions. • investigate equivalent fractions. • read, write, and identify decimals. • develop equivalent relationships between common fractions, decimals and whole numbers. • add and subtract fractions with common denominators using manipulatives or diagrams. • make predictions to determine the fairness of possible outcomes of simple probability experiments using a variety of appropriate manipulatives. <p>English/Language Arts</p> <ul style="list-style-type: none"> • apply writing-to-learn and writing-to-demonstrate-learning strategies. 	<p>Student will</p> <ul style="list-style-type: none"> • use manipulatives to identify fractional pieces that make a whole. Develop equations to demonstrate addition and subtraction of fractions with common denominators (e.g., $\frac{1}{2} + \frac{1}{2} = 1$, $\frac{1}{3} + \frac{1}{3} + \frac{1}{3} = 1$).

Grade 4 Interdisciplinary Model

Pond Study

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Student will</p> <ul style="list-style-type: none"> • use grid paper and color all squares using five colors. Determine the likelihood of dropping coin on one color. Identify the fractional part of individual grids colored with the five different colors. Estimate likelihood of landing on two colors by adding fractions. Discuss the chances of dropping coin on square as being the fraction of times they expect to land on that color. 	<p>Student will</p> <ul style="list-style-type: none"> • develop books for younger students to demonstrate addition of fractions with common denominators. Identify number of $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$, and $\frac{3}{4}$ cups in pints, quarts, and gallons. Include illustrations and descriptions of computational procedures. 	<p>Student will</p> <ul style="list-style-type: none"> • write at least three subtraction equations using fractions with common denominators that have an answer of $\frac{2}{3}$. Write at least three addition equations using fractions with common denominators that have an answer of three. 	<p>Student will</p> <ul style="list-style-type: none"> • solve fraction problems (e.g., A friend of yours solved this fraction problem, $\frac{1}{2} + \frac{1}{2} = \frac{1}{2}$, for homework and asked if you thought it was correct. You decided to teach her about fractions so she could determine if the answer was reasonable. Explain the solution using drawings, estimations, number sense, manipulatives, or other approaches.). Report problem-solving processes to class.

Grade 4 Interdisciplinary Model

Pond Study

Sample Extensions for Diverse Students

Yoshimi has some difficulty interpreting written text. However, her speaking skills are very good. Working in groups, she can improve her skills by developing skits to demonstrate understanding of literature connected to water systems. Because of her interest in photography she will develop a photo essay with written text describing characteristics of a variety of water systems (*Types of extensions: purpose and appropriateness, demonstration of knowledge, motivation, participation, resources and materials*).

Wendy understands all information presented orally on grade-level materials. Provide Wendy with audiotapes for all assigned reading materials. For self-selected materials, she will either access audiotapes or choose material on her reading level. For her responses, she uses voice to text on computers (*Types of extensions: resources and materials, procedures and routines*).

Lonni is working on strategies to control his anger and replace his aggressive behaviors with appropriate behaviors. He is academically on grade level. The teacher facilitates Lonni's selection of literature characters in the books have similar experiences and portray positive strategies to deal with adversity and problem solving (e.g., of abuse, cycle of drug addictions, selection of role models, physical aggression). (*Types of extensions: purpose and appropriateness, level of support, participation, motivation*).

Lisa and Zak are working on strategies to improve completing activities having multiple steps, efficiently completing activities, understanding reading materials written on lower levels, and retrieving information read. To assist Lisa and Zak, the teacher facilitates brainstorming sessions about multiple ways to complete activities. Following the sessions the teacher conferences with Lisa and Zak to develop planning strategy guides. Lisa's and Zak's teacher used the Guided Reading Procedure to develop their reading skills and strategies (*Types of extensions: resources and materials, level of support, procedures and routines, time, order of learning*).

Eric is a high achieving math student. He gets along well with his peers but prefers to work alone on projects. He is given the opportunity to choose a topic concerning water and conduct a small research project. To demonstrate his findings he will develop charts or a multimedia presentation. Arrangements will be made so he can work independently without interruptions (*Types of extensions: complexity, magnitude, time, pace, order of learning, demonstration of knowledge*).

Jackson read an article in a science journal about a large population of deformed frogs in ponds in particular locations in the United States. He showed a special interest in how such mutations occur and was encouraged by his teacher to set up an independent project. His teacher and the gifted and talented specialist assisted him in designing a project contract. The resource librarian will assist him in accessing more information and contacting scientists studying this phenomenon via the Internet and e-mail (*Types of extensions: purpose and appropriateness, complexity, level of support, resources and materials, demonstration of knowledge, participation, procedures and routines, order of learning, time, environment*).

As a result of consultation and planning with the classroom teacher, the gifted and talented specialist will work with a group of students including those who participate in the Future Problem Solving event as members of the academic team. The group will learn and refine their skills in FPS by applying the future problem solving process to scenarios dealing with acid rain and water pollution. (Future Problem Solving Across the Curriculum includes several such scenarios). They will present their problems and solutions to the class by performing skits (*Types of extensions: purpose and appropriateness, complexity, level of support, magnitude, resources and materials, motivation, demonstration of knowledge, participation*).

Grade 4 Interdisciplinary Model
Pond Study

Resources

Internet Addresses:

<http://www.isc.rit.edu/~aesopwww/activities/cloud.html> (Making Clouds: The Water Cycle)

NOTES

Grade 4 Interdisciplinary Model
Economics

NOTES

Grade 4 Interdisciplinary Model Economics

Broad-Based Theme:	Structure and Function of Economic Systems
Content Area:	Social Studies
Supplemental Content Areas:	English/Language Arts, Arts and Humanities (Visual Arts, Drama), Mathematics

Unit Framework Overview:

In this unit framework, students investigate fundamental concepts of economics and the delicate balance among those factors. Sample activities guide students through an inquiry process to explore the economic concepts of

- scarcity,
- supply and demand,
- goods and services,
- production and consumerism, and
- opportunity costs.

Pages of the unit frameworks are arranged in pairs. On the left page of each pair are guiding questions along with related academic expectations and correlations to the *Program of Studies*. Unit frameworks are organized around guiding questions that direct teachers' choices of activities. Students should be able to answer these questions by the end of the unit framework.

Sample activities for each instructional setting (e.g., whole group, flexible groups, learning centers, independent work) are listed in columns. Activities are aligned horizontally to demonstrate how instruction moves from guided or facilitated learning to independent learning and self-reflection by students. Sample activities are varied to support students' individual learning styles and interests. Students work in appropriate large and small cooperative groups and as independent learners. While sample activities address *Program of Studies* content, they are not intended to be comprehensive. Some content bullets included in the unit frameworks designate skills and processes that should be taught throughout the year (e.g., mathematical procedures and computations) but are not repeated in every framework. (See the *Curriculum and Evaluation Standards for School Mathematics Addenda Series*, National Council of Teachers of Mathematics, for additional activities in mathematics. The *National Science Education Standards* provide more details and explanations regarding scientific inquiry, conceptual understandings, and applications/connections.) Teachers are responsible for planning instruction that includes appropriate extensions for unit framework activities to address the interests, needs, and abilities of all students including gifted and talented, children with disabilities, and those with limited English proficiency.

Guiding Questions:

- How does the production of various goods and services impact my state, regional, and local economies?
- How are goods produced, and how do goods and services impact the economy?
- How can I analyze patterns and relationships to solve problems?

Grade 4 Interdisciplinary Model

Economics

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Economics (2.18)</p> <p>Writing (1.11)</p> <p>Reading (1.2)</p> <p>Productive Team Membership (4.2)</p> <p>Visual Arts (1.12, 2.22, 2.26)</p> <p>Drama (2.22 - 2.26)</p>	<p>How does production of various goods and services impact my state, regional, and local economies?</p>	<p>Students will</p> <p>Social Studies</p> <ul style="list-style-type: none"> • understand economic concepts. • understand how humans have interacted with the environment to meet needs. • understand that producers create goods and services, and consumers make economic choices. • understand economic problem of scarcity. <p>Arts and Humanities</p> <ul style="list-style-type: none"> • create simple dramatic works using elements of drama. • use a variety of media and art processes to produce two- and three-dimensional works of art. • create works or art using the elements of art and principles of design. <p>English/Language Arts</p> <ul style="list-style-type: none"> • write transactive pieces. • apply writing-to-learn and writing-to-demonstrate-learning strategies. • identify and apply characteristics of effective writing. • write literary pieces. • write personal pieces. • employ reading strategies. • take notes from research. • use information from various sources to produce writing. <p>Health</p> <ul style="list-style-type: none"> • evaluate media and advertising techniques. • describe needs and wants. • determine ways in which goods and services used by families impact the environment. 	<p>Students will</p> <ul style="list-style-type: none"> • identify community businesses that produce goods and provide services. Plot findings on maps to determine if similar businesses are located in particular areas. • develop understanding of economic vocabulary by defining and discussing terms and recording definitions in journals (e.g., wants/needs, choices/opportunity cost, supply/demand, scarcity, goods/services, markets, profits, producer/consumer). • name and discuss one product produced in their state. Examine ways production of various goods impacts the environment. Create illustrated production lines, showing where natural resources are used or impacted.

Grade 4 Interdisciplinary Model Economics

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • create community resource guides identifying states involved in the production, marketing, and selling of products within their community. • create skits using elements of drama to demonstrate understanding of economic concepts: wants/needs, choices/opportunity costs, supply/demand, scarcity, goods/services, markets, profits, and producers/consumers. Share with class and identify economic concept being portrayed. • identify several Kentucky products and make lists of factors that would affect supply and demand. Create solutions for supply and demand problems. Write letters to business leaders describing solutions. 	<p>Students will</p> <ul style="list-style-type: none"> • use state resource guides to design questions about population, water use, minerals, and manufacturing to be used in trivia games. • write and illustrate books for young children that identify economic concepts as they relate to local, regional, or state economies. • analyze and chart techniques advertisers use to sell products. Prepare advertising campaigns to increase the demand for one Kentucky-made product. 	<p>Students will</p> <ul style="list-style-type: none"> • review community and state maps and resource guides to develop news articles identifying types of businesses needed in their community or state. • identify personal experiences related to economic concepts being addressed. Develop personal narratives describing a situation involving an economic problem (e.g., scarcity: Once I didn't have enough money at the grocery.; opportunity cost: I made the decision to play basketball instead of playing in the band.). • use various art media and processes to produce models of a product created in your community. Develop graphic organizers to show the effect of the product on local economy. 	<p>Students will</p> <ul style="list-style-type: none"> • edit and revise articles through conference with teacher. • use state scoring guide to critique writing (e.g., children's book, personal narrative). • develop transactive piece for publication in Kentucky magazines analyzing economic impact of Kentucky products.

Grade 4 Interdisciplinary Model

Economics

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Economics (2.18)</p> <p>Consumer Decisions (2.30)</p> <p>Reading (1.2)</p> <p>Productive Team Membership (4.2)</p> <p>Creative Thinking (5.2)</p> <p>Writing (1.11)</p>	<p>How are goods produced, and how do goods and services impact the economy?</p>	<p>Students will</p> <p>Social Studies</p> <ul style="list-style-type: none"> • recognize why economic systems are created. • understand economic concepts. <p>English/Language Arts</p> <ul style="list-style-type: none"> • write transactive pieces. • respond to a variety of literature. • use information from various sources to produce writing. • apply writing-to-learn and writing-to-demonstrate-learning strategies. • write literacy pieces. • develop questions to obtain ideas for tasks. • explore technology as means of communication. • employ reading strategies. • utilize text features and organizational patterns to interpret transactive reading materials. • select and read materials for enjoyment. • prepare and deliver formal presentations. 	<p>Students will</p> <ul style="list-style-type: none"> • discuss production of goods and services (e.g., labor, materials, natural resources, equipment capital). Develop charts to demonstrate how each are used to make Kentucky products. • participate in field trips to local businesses. Identify factors of production for each business. Discuss how business determines price of products. Develop video presentations for school economic fair. • participate in barter day where items are traded with other students. Discuss convenience of money. Listen to <i>The Story of Money</i> read by teacher and develop pictorial representation of how money changed over time.

Grade 4 Interdisciplinary Model Economics

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • use various resources to discover how products are made. Design children's books to describe production process. • discuss participation in school economic fair, identifying types of goods and services students would be willing to purchase. Determine production methods, cost of creating products, and number of items to be produced. Devise business plans. • read articles from children's economics magazines (e.g., <i>Zillions</i>, <i>Consumer Reports</i>) and analyze new products. Discuss items they currently own that could be used in a bartering system. Record reflections in journals. 	<p>Students will</p> <ul style="list-style-type: none"> • explore production processes for community-made products. Design diagrams describing production process from start to finish. Display during economic fair. • work with business partners to prepare products, design business plans, and determine prices of product to be sold at school economic fair. • develop surveys to identify wants of classmates. Produce goods or services that will satisfy their wants. Trade products with peers. 	<p>Students will</p> <ul style="list-style-type: none"> • identify materials needed to produce one community made product. Use various resources to determine where materials are available. Make graphic organizers for class presentations. • create advertising campaigns for business ventures. Determine best method for marketing campaigns. • imagine living during a time when bartering was essential for satisfying wants and needs. If this system were still used today, what would consumers most want or need, and what would they be willing to trade to get it. Develop persuasive pieces encouraging the trade. 	<p>Students will</p> <ul style="list-style-type: none"> • design books illustrating how products are made. • develop journal entries recommending business improvements. • compare the barter system to our current system of exchange. Use graphic organizers, Venn diagrams, and charts. Present findings orally to the class.

Grade 4 Interdisciplinary Model

Economics

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Numbers, Integers and Place Value, Number Computation (2.7, 2.8, 2.12)</p> <p>Algebraic Ideas (2.11)</p> <p>Writing (1.11)</p> <p>Consumer Decisions (2.30)</p>	<p>How can I analyze patterns and relationships to solve problems?</p>	<p>Students will Mathematics</p> <ul style="list-style-type: none"> • compare and contrast number patterns. • explore variables and solve equations using variables. • formulate rules for number relationships. • graph points on a number line. • represent and describe relationships through the use of variables, ordered pairs, lists in tables, plots on graphs, and patterns. • add, subtract, multiply and divide whole numbers. • determine factors and multiples of a whole number. • choose appropriate means to collect, organize, and display data. <p>Health</p> <ul style="list-style-type: none"> • select planning and saving strategies for specific purchases. <p>English/Language Arts</p> <ul style="list-style-type: none"> • write transactive pieces. • apply writing-to-learn and writing-to-demonstrate-learning strategies. 	<p>Students will</p> <ul style="list-style-type: none"> • use a 12 x 12 multiplication table to identify patterns in multiplication. List and discuss multiples of one number. Color or cover the multiples and discuss the patterns created. Work in groups to color separate pattern tables for multiples of numbers 2-12. Compare tables looking for distinct and similar patterns. Describe findings in journals. • divide into four groups to test four brands of popcorn. Pop 1/4 cup of each brand. Plot information on double bar graphs showing number of kernels popped and number of kernels not popped from each brand. Discuss class findings and draw conclusions about the best popcorn. <p style="text-align: right;"><i>Continued on page 66</i></p>

Grade 4 Interdisciplinary Model Economics

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> recognize number patterns and test conjectures. Solve number riddles by guessing the rules (e.g., all numbers are multiples of seven) that apply to sets of three numbers. Invent future rules (e.g., the third number is the sum of first two; the third number is the product of the first two). participate in mini-lessons on process of gathering, recording, and displaying data. 	<p>Students will</p> <ul style="list-style-type: none"> explore growing patterns through the use of manipulatives. Develop growing patterns that extend through five terms or phases. Devise tables to represent patterns numerically and describe relationships between numbers. pose questions about the quality of paper towels (e.g., Which paper is most absorbent? Which towel will hold most weight? Which cost less per sheet? Which towel is largest?) Conduct investigations, collect data, and develop graphs to display results. Draw conclusions and present findings to class. 	<p>Students will</p> <ul style="list-style-type: none"> solve problems with or without manipulatives. Develop growing patterns that extend through five terms or phases. Devise tables to represent patterns numerically and describe relationships between numbers. gather information about cost of a product (e.g., milk) in various sizes (e.g., gallon, quart, pint). Determine best value and develop graphic organizers (e.g., chart, table, graph) to illustrate findings. Create class wise consumer booklet to be given to parents. 	<p>Students will</p> <ul style="list-style-type: none"> respond to open-response situations involving number patterns. respond to open-response situations exploring relationships in tables, graphs, and number lines.

Grade 4 Interdisciplinary Model

Economics

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Numbers, Integers and Place Value, Number Computation (2.7, 2.8, 2.12)</p> <p>Algebraic Ideas (2.11)</p> <p>Writing (1.11)</p> <p>Consumer Decisions (2.30)</p>	<p><i>Continued from page 64</i></p> <p>How can I analyze patterns and relationships to solve problems?</p>	<p>Students will Mathematics</p> <ul style="list-style-type: none"> • compare and contrast number patterns. • explore variables and solve equations using variables. • formulate rules for number relationships. • graph points on a number line. • represent and describe relationships through the use of variables, ordered pairs, lists in tables, plots on graphs, and patterns. • add, subtract, multiply and divide whole numbers. • determine factors and multiples of a whole number. • choose appropriate means to collect, organize, and display data. <p>Health</p> <ul style="list-style-type: none"> • select planning and saving strategies for specific purchases. <p>English/Language Arts</p> <ul style="list-style-type: none"> • write transactive pieces. • apply writing-to-learn and writing-to-demonstrate-learning strategies. 	<p>Students will</p> <ul style="list-style-type: none"> • observe typical supply curve (e.g., cost of resources go up, improved technology, demand goes down) for products. Discuss economic variables that affect the supply curve.

Grade 4 Interdisciplinary Model Economics

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Student will</p> <ul style="list-style-type: none"> design investigations for school economics fair. Analyze supply and demand situations that affect sales (e.g., 10% off popcorn for sale during twenty minute intervals. Adjust price to \$.25 for twenty minute interval, then adjust price to \$.10 for twenty minute interval). Record number of sales at each price range. Develop bar graphs to show effects of cost on sales. Analyze results and draw conclusions. 	<p>Student will</p> <ul style="list-style-type: none"> analyze five products and determine the demand for the product, both past and present. Develop line graph to show cost of products over time. Determine correlation between demand for the product and the cost. 	<p>Student will</p> <ul style="list-style-type: none"> describe and analyze variables (e.g., time, temperature, event) that affect business ventures (e.g., product or service). Develop scenarios to determine business venture that would be profitable under different conditions. 	<p>Student will</p> <ul style="list-style-type: none"> develop proposals for establishing new businesses.

Grade 4 Interdisciplinary Model

Economics

Sample Extensions for Diverse Learners

Pedro and Nora bring many experiences from their native countries. They are in the initial stages of learning English as their second language. As part of the introduction to the economics unit, the teacher uses a variety of word/sound play activities including jazz chants and poetry incorporating language of the unit and useful social language. Pedro and Nora participate in the jazz chants in the form of dialogues and poetry to learn language routines, patterns, and vocabulary to improve their speaking, listening, and understanding of cultural rules. They draw pictures of products from their countries to share during the class discussions on products in Kentucky. They create a chain of wants and organize these to show how products from their countries are produced (*Types of extensions: purpose and appropriateness, order of learning, participation, motivation, demonstration of knowledge, resources and materials*).

Sara, Patrick, and Nikom have artistic and technology skills and a keen interest in local Kentucky artists and crafts. They will create advertisements (computer-generated or handmade) that illustrate crafts in Kentucky. Sara, Patrick, and Nikom will generate articles describing the impact local artists and crafts have had on Kentucky's economy (*Types of extensions: purpose and appropriateness, pace, demonstration of knowledge, level of support, participation*).

Robbie works on the school newspaper. He learns at the same level and rate as his peers but needs large print and oral presentations of information. He also uses a computer voice-to-text, to prepare presentations. Robbie will work with Sara and Patrick to create text for their advertisements and articles on Kentucky crafts (*Types of extensions: purpose and appropriateness, procedures and routines, order of learning, resources and materials, level of support*).

Whitney, Shania, Kenneth, and Damien are expressive readers and writers, like to draw, and are volunteers for their school economics fair. They need extended support and strategies to understand relationships among fractions, decimals, and percents. In their flexible groups and in the learning center, the teacher reviews the concepts using mini-lessons, provides written models for reference, and scaffolded pie charts that show relationships (e.g., $\frac{1}{2}$, 50%, $\frac{1}{4}$, 25%). As they solve equations related to the economics fair, they use the pie chart to review the decimal and percentage for $\frac{1}{6}$. Whitney, Shania, Kenneth, and Damien look for examples of fractions, decimals, and percentages at home and in the community. They use the examples to create new pie charts (*Types of extensions: purpose and appropriateness, procedures and routines, environment, demonstration of knowledge, participation, level of support*).

Brendon and Kylie process information the same as their same-age peers except in math reasoning. They use software programs to enhance learning of basic math concepts. Additional time is built in routinely for completion of math activities and assignments. Assignments are adjusted to reduce the number of problems they need to complete. The teacher models cognitive and metacognitive strategies (e.g., goal setting, self-monitoring, questioning) and provides them with cue cards to guide their thinking and exemplars of problems illustrating problem-solving strategies (*Type of extensions: complexity, time, procedures and routines, order of learning, level of support, resources and materials*).

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Economics

Sample Extensions for Diverse Learners

Tess and Paula are talented creative writers. They will select a Kentucky product and write about the steps in its development, marketing, and consumption from the perspective of the raw materials and finished product. They will discuss and edit their stories under the guidance of the writing specialist or a local author. Chris and Alan, talented artists, will meet with an illustrator through an arrangement with the school art teacher. They will study the stories written by Tess and Paula, determine what illustrations would enhance the script, where they should appear, what medium options they might use, and techniques of illustration. Chris and Alan will then consult with Tess and Paula and collaborate on the final books (*Types of extensions: purpose and appropriateness, resources and materials, magnitude, participation, motivation, demonstration of knowledge, level of support, environment*).

Students diagnosed with math abilities beyond their age peers are in an advanced-level instructional group in math. This group has had instruction in calculating percents. They will obtain grocery ads from a local grocery store or interview the manager. The students will find the prices of goods/grocery items for January and August for each of the past four years and the current year and determine percent increases or decreases. They will also interview the manager to find if store owners typically use a percentage mark-up to set regular prices over cost and to reduce prices for sales. The students will share their findings with their classmates and/or math group. They will also demonstrate how to determine if an advertised claim of x% discount or reduction is as good as it sounds (*Types of extensions: purpose and appropriateness, complexity, environment, level of support, motivation, resources and materials, demonstration of knowledge*).

Resources

Internet Addresses:

<http://www.ncsa.uiuc.edu/edu/RSE/RSEyellow/gnb.html> (a stock market game with lesson plans)

<http://206.225.311.15/> (a stock market simulation game)

Grade 4 Interdisciplinary Model
Geography

NOTES

Grade 4 Interdisciplinary Model Geography

Broad-Based Theme:	Geographic Interaction Between People
Content Areas:	Social Studies, English/Language Arts
Supplemental Content Areas:	Mathematics, Arts and Humanities (Visual Arts, Drama, Music), Science

Unit Framework Overview:

In this unit framework, students explore the five themes of geography and use hands-on materials to explore local, regional, and state issues. Sample activities guide students through an inquiry process to

- use mapping skills to solve problems, observe and analyze information,
- apply critical-thinking skills to interpret geographical knowledge; analyze environmental issues.

Pages of the unit framework are arranged in pairs. On the left page of each pair are guiding questions along with related academic expectations and correlations to the *Program of Studies*. Unit frameworks are organized around guiding questions that direct teachers' choices of activities. Students should be able to answer these questions by the end of the unit framework.

Sample activities for each instructional setting (e.g., whole group, flexible groups, learning centers, independent work) are listed in columns. Activities are aligned horizontally to demonstrate how instruction moves from guided or facilitated learning to independent learning and self-reflection by students. Sample activities are varied to support students' individual learning styles and interests. Students work in appropriate large and small cooperative groups and as independent learners. While sample activities address *Program of Studies* content, they are not intended to be comprehensive. Some content bullets included in the unit frameworks designate skills and processes (e.g., mathematical procedures and computations) that should be taught throughout the year but are not repeated in every framework. (See the *Curriculum and Evaluation Standards for School Mathematics Addenda Series*, National Council of Teachers of Mathematics, for additional activities in mathematics. The *National Science Education Standards* provide more details and explanations regarding scientific inquiry, conceptual understandings, and applications/connections.) Teachers are responsible for planning instruction that includes appropriate extensions for unit framework activities to address the interests, needs, and abilities of all students including gifted and talented, children with disabilities, and those with limited English proficiency.

Guiding Questions:

- How do I use resources to learn about regions of Kentucky?
- How do people in those regions use resources to meet their needs?
- How do geographic tools help me learn about my state in relation to the United States?
- How do regional environmental problems affect my state?
- How are regional issues reflected in writing by Kentucky authors and journalists?
- How do the arts reflect the history and culture of my state?
- How are numbers used to represent information in my daily life?

Grade 4 Interdisciplinary Model Geography

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Geography (2.19)</p> <p>Inquiry (1.1)</p> <p>Reading (1.2)</p> <p>Writing (1.11)</p> <p>Productive Team Membership (4.2)</p>	<p>How do I use resources to learn about regions of Kentucky?</p> <p>How do people in those regions use resources to meet their needs?</p>	<p>Students will</p> <p>English/Language Arts</p> <ul style="list-style-type: none"> • understand and respond to a variety of reading material. • recognize characteristics of different kinds of works. • employ reading strategies. • use information from various sources to produce writing. • write transactive pieces. • explore research tools and use technology. • explore technology as a means of communication. <p>Social Studies</p> <ul style="list-style-type: none"> • recognize the five themes of geography. • use various representations to find and explain geographical features of Kentucky. • understand how humans have interacted with environment to meet needs. • understand that specific symbols, slogans, buildings, and monuments represent ideas and events in Kentucky's history. • recognize unique places in regions of United States. 	<p>Students will</p> <ul style="list-style-type: none"> • learn to use various research tools (e.g., Kentucky textbooks, Internet, magazines) needed to gather information. Use K-W-L charts as organizational tools for investigating regions of Kentucky . • develop pen pal relationships with students from other counties and different regions for exchange of information about community, region, or state. • generate lists of topics that could be used in brochures about regions of Kentucky. • use technological tools to create brochures about resources in Kentucky's regions.

Grade 4 Interdisciplinary Model Geography

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> participate in mini-lessons concerning use of Internet. Discuss validity and reliability of sources. read short stories, poems, essays, or personal logs written in letter form. Critique style, purpose, and audience. Compare characteristics and elements of different works from different regions. analyze variety of brochures to identify text features and organizational patterns. begin preparation of brochures to highlight how people in Kentucky's regions have interacted with their environment to meet their needs. 	<p>Students will</p> <ul style="list-style-type: none"> work individually or with groups to find Kentucky's home page. Read information and generate three to five questions to be used in a Kentucky trivia game. write letters to pen pals describing geography of their community and requesting geographic information about pen pals' community. read brochures to determine elements, purpose, audience, and fact versus opinion. Discuss with group and analyze the type of reading (e.g., practical workplace, persuasive, informational). edit and revise brochures with partners. Identify possible distribution centers (e.g., board office, library, doctors' office). 	<p>Students will</p> <ul style="list-style-type: none"> gather information from various sources about Kentucky regions. Identify specific symbols, slogans, buildings, and monuments representing ideas and events in Kentucky's history. create graphic organizers to share with pen pals, labeling five themes of geography (location, place, relationships with place, movement, regions). Analyze characteristics of your region in relation to those themes. begin prewriting activities (e.g., purpose, audience, mode, organization, text features, layout) for student-created brochures by drafting basic design. work cooperatively with students who created brochures about the same Kentucky region and develop class presentations about that region. 	<p>Students will</p> <ul style="list-style-type: none"> identify sources used in research by title and author to create resource pages. identify information based on five themes of geography in graphic organizer. orally present prewriting to peers and teacher to conference and receive feedback. develop and present brochures about Kentucky regions.

Grade 4 Interdisciplinary Model Geography

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Geography (2.19)</p> <p>Inquiry (1.1)</p> <p>Reading (1.2)</p> <p>Visual Arts (1.13, 2.22, 2.26)</p> <p>Drama (2.22 - 2.26)</p>	<p>How do geographic tools help me learn about my state in relation to the United States?</p>	<p>Students will</p> <p>Social Studies</p> <ul style="list-style-type: none"> • understand that all places on earth have an absolute and relative location. • use tools to find geographic information. • develop mental maps. • recognize how the physical environment, especially in the past, limited and promoted human settlement and activities in Kentucky. • recognize unique places in regions of the United States. <p>English/Language Arts</p> <ul style="list-style-type: none"> • prepare and deliver formal presentations. • develop listening, speaking, observing skills. • apply writing-to-learn and writing-to-demonstrate-learning strategies. • write transactive pieces. • write personal pieces. <p>Arts and Humanities</p> <ul style="list-style-type: none"> • use a variety of media and processes to produce two-and three-dimensional works of art. • create simple dramatic works using the elements of drama. • demonstrate through performance various types of drama (e.g., improvisation, mimicry, pantomime, role-playing, storytelling). 	<p>Students will</p> <ul style="list-style-type: none"> • use various representations of North America, United States, and Kentucky (e.g., maps, globes, mental maps) to find and explain human and physical geographic features. • investigate think-pair-share process as learning tool. Use process in discussions of geography. • select season of the year and plan trips in Kentucky. Determine routes and estimate amount of time for trips. Identify type and amount of clothes needed and amount of money to take on trip.

Grade 4 Interdisciplinary Model Geography

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • develop Venn diagrams to compare Kentucky with other states. Compare climate, vegetation, wildlife, human population, industry. • use think-pair-share to examine movement and settlement of the different regions in Kentucky and the United States. • use state road maps and tour guide books to plan trips within the state. Identify points of interest. Write directions to each destination. 	<p>Students will</p> <ul style="list-style-type: none"> • select states and create maps with keys. Identify characteristics (e.g., climate, vegetation, wildlife, industry) of each state. • develop dramatic performances with think-pair-share partners. Use various types of drama (e.g., skit, storytelling, role-playing) to describe movement and settlement of different regions of Kentucky and the United States. • create spreadsheets to record estimated costs of lodging, food, gas, and entertainment for planned trip. 	<p>Students will</p> <ul style="list-style-type: none"> • create graphic organizers to compare Kentucky to other states. • interview family members to identify movement and settlement patterns of families. Develop personal essays, memoirs, and video or audiotapes to present to class. • create illustrations or articles for class magazine about Kentucky's highlights (e.g., points of interest, historical landmarks, tourist attractions, directions). Compile articles into magazines to be placed in welcome centers around the state. 	<p>Students will</p> <ul style="list-style-type: none"> • respond to open-response situations concerning geographic features of Kentucky (e.g., rivers, mountains, lakes). • view class presentations. I d e n t i f y similarities and differences in movement and settlement patterns of classmates. • highlight one aspect of Kentucky trip in an on-demand writing piece. Use criteria for effective writing.

Grade 4 Interdisciplinary Model

Geography

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy and Change Over Time (2.1-2.6)</p> <p>Geography (2.19)</p> <p>Inquiry (1.1)</p> <p>Reading (1.2)</p> <p>Visual Arts (1.13, 2.22, 2.26)</p>	<p>How do regional environmental problems affect my state?</p>	<p>Students will Science</p> <ul style="list-style-type: none"> describe the role of science and technology in local issues. <p>English/Language Arts</p> <ul style="list-style-type: none"> employ reading strategies. recognize characteristics and elements of different works. write personal pieces. use technology to access information. respond to author's opinions and details used to support those opinions. use contextual vocabulary and comprehension strategies to understand text. utilize text features and organizational patterns. <p>Social Studies</p> <ul style="list-style-type: none"> understand how humans have interacted with the physical environment to meet their needs. use variety of tools to find and present geographic information. understand how social institutions in Kentucky's past and regions of the United States respond to human needs, structure society, and influence behavior. recognize how tensions and conflict can develop between and among individuals, groups, and institutions. <p>Arts and Humanities</p> <ul style="list-style-type: none"> create works of art using the elements of art and principles of design. 	<p>Students will</p> <ul style="list-style-type: none"> listen to presentations by state foresters, conservation officers, or county extension agents about varieties of trees in Kentucky. identify and analyze laws that protect forested areas in Kentucky. Read news articles from different regions concerning environmental issues. Compare regional opinions on environmental issues. Discuss and debate issues surrounding opposition or support for the laws. Examine how governments, past and present, have responded to environmental issues. identify environmental problems in regions of Kentucky. Collect articles to illustrate how water, air, and land are affected or destroyed by people, animals, or nature. Discuss possible solutions to problems. Develop bulletin boards to display information.

Grade 4 Interdisciplinary Model Geography

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • read and summarize information from resources and presentations about trees. Use text features and organizational patterns to interpret transactive reading materials. Create databases of Kentucky's trees. • locate areas in Kentucky protected by laws from development (e.g., state forests). Draw conclusions about why the area is protected. Identify how the protection of sensitive areas affects them individually. Discuss tensions and conflicts that have developed among individuals, groups, and institutions regarding environmental issues. • participate in mini-lessons involving speech and writing techniques. Develop booklets on effective writing and speaking criteria. 	<p>Students will</p> <ul style="list-style-type: none"> • draw pictures of Kentucky's trees. Consider the elements of art and principles of design when drawing pictures. Develop classification system for trees. Take field trips to identify trees. Tally the number of each tree species found. • gather information about regional environmental problems. Use reading and contextual vocabulary and comprehension strategies to understand text. Summarize one problem and propose a solution in letters to the mayor. Identify social institutions responsible for solving the problem and interview officials to determine their course of action. • view video segments of various speeches or read speeches and analyze techniques. 	<p>Students will</p> <ul style="list-style-type: none"> • compile drawings into tree identification booklets. Share with students in other geographic regions. Explore vegetation patterns across the state. • critique school, community, or state environmental problem or law through editorial cartoons. • prepare speeches to present at town meetings about important issues in their community. 	<p>Students will</p> <ul style="list-style-type: none"> • develop classification charts using bark, leaf, and seed samples. Share classification charts with peers. • present cartoons to class through oral reflection of problems, laws, or points of view. • present speeches to class for peer review.

Grade 4 Interdisciplinary Model

Geography

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Reading (1.2)</p> <p>Writing (1.11)</p> <p>Speaking/ Listening/ Observing (1.12)</p> <p>Culture and Society (2.16, 2.17)</p> <p>Visual Arts (1.13, 2.22, 2.26)</p>	<p>How are regional issues reflected in writing by Kentucky authors and journalists?</p>	<p>Students will</p> <p>English/Language Arts</p> <ul style="list-style-type: none"> • recognize characteristics of different works. • utilize text features and organizational patterns. • use contextual vocabulary and comprehension strategies to understand text. • employ reading strategies. • select and read materials for enjoyment. • write transactive pieces. • apply writing-to-learn and writing-to-demonstrate-learning strategies. • apply characteristics of effective writing. • write literary pieces. • respond to authors' opinions and details used to support those opinions. <p>Social Studies</p> <ul style="list-style-type: none"> • recognize the five themes of Geography and use to analyze geographic issues and problems. • recognize elements of culture. • understand similarities and differences in ways cultural groups address needs. • analyze strategies to address conflict resolution. <p>Arts and Humanities</p> <ul style="list-style-type: none"> • use a variety of media and processes to produce two-and three-dimensional works of art. • describe how media and processes are used for creating a variety of art works. <p>Health Education</p> <ul style="list-style-type: none"> • explore strategies for dealing with conflict and anger. 	<p>Students will</p> <ul style="list-style-type: none"> • read newspaper articles that represent the five themes of geography. Respond to authors' points of view. Debate students' points of view. • identify Kentucky authors (e.g., George Ella Lyon, Jesse Stewart). After reading one book, determine how Kentucky culture is reflected in the writing. Read books by other Kentucky authors for enjoyment. • analyze Kentucky newspapers for organizational design. Compare layout, information, sections, and styles. Identify similarities and differences among local, regional, and state level newspapers. Use contextual vocabulary and comprehension strategies to understand text. • acquire and apply conflict-resolution strategies with assistance from guidance counselors.

Grade 4 Interdisciplinary Model Geography

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • read and compare editorials. Recognize writing techniques and discuss issues through think-pair-share process. • select and read materials by Kentucky authors. Develop story maps identifying cultural characteristics of stories. • read samples of works by Kentucky authors or journalists. Determine how Kentucky heritage or culture affected writing of Kentucky authors or journalists. Compare findings in graphic organizers. • develop conflict-resolution strategies through role-playing. Find examples of conflict-resolution strategies described in newspapers. 	<p>Students will</p> <ul style="list-style-type: none"> • interview editors of school and local newspapers. Discuss how editors select and write editorials on current school, community, or state issues. • compare two books by the same Kentucky author. Discuss similarities and differences in writing style. Record findings in graphic organizers. • write letters to Kentucky authors or journalists. Examine reasons why they became authors and how Kentucky culture influenced their writing. • analyze classroom, community, or state problems. Evaluate and compare problems. 	<p>Students will</p> <ul style="list-style-type: none"> • develop and publish class newspapers. • use various art media to design murals showcasing Kentucky authors and their works. Describe how media and processes are used for creating book covers and story illustrations. • read newspaper articles. Write position papers responding to editors' opinions. Provide supporting details. • work with partners to edit and revise written pieces for class newspapers. Use criteria for effective writing. 	<p>Students will</p> <ul style="list-style-type: none"> • prepare editorials about school, community, or state issues. Use criteria for effective writing. • design children's books using same pattern as a previously analyzed Kentucky authors' book. • develop position papers agreeing or disagreeing with authors' points of view. • publish articles in school newspapers that analyze problems in classroom, community, or state.

Grade 4 Interdisciplinary Model

Geography

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>How do the arts reflect the history and culture of my state?</p> <p>Speaking/Listening/Observing (1.3, 1.4, 1.12)</p> <p>Writing (1.11)</p> <p>Dance (1.15, 2.22, 2.26)</p> <p>Visual Arts (1.13, 2.22, 2.26)</p> <p>Music (1.14, 2.22, 2.26)</p> <p>Drama (2.22, 2.26)</p>		<p>Students will Arts and Humanities</p> <ul style="list-style-type: none"> describe how dramatic works reflect specific cultures, periods and/or styles. create simple dramatic works and discuss elements of drama. use a variety of media and art processes to produce two- and three-dimensional works of art. describe the role of visual arts in different cultures. demonstrate the ability to recognize the relationship between the elements of dance and the expressive qualities of movement (e.g., ideas, emotions). demonstrate the ability to perform a dance alone, with a partner, and in a small group using the three elements of movement (space, time, force). <p>All <i>Program of Studies</i> Historical and Cultural Context dance bullets can be found in this guiding question.</p> <ul style="list-style-type: none"> recognize the three purposes of dance in society. create movement sequences using the elements of dance. use and develop elements of music. use the appropriate terminology to describe the purpose of music elements. use appropriate terminology to describe music of diverse cultures, periods, and styles. perform music from diverse cultures, periods, and styles. <p>English/Language Arts</p> <ul style="list-style-type: none"> develop transactive writing. apply writing-to-learn and writing-to-demonstrate-learning strategies. recognize characteristics of different works. select and read materials for enjoyment. 	<p>Students will</p> <ul style="list-style-type: none"> compare folk tales from Kentucky in graphic organizers. Discuss characteristics and elements of folk tales. Read folk tales and share with peers. discuss origins of dance. Identify cultures, purposes, and styles. View dance performances and compare the elements of dance from diverse cultures, periods, and styles. listen to a variety of musical styles (e.g., bluegrass, folk, instrumental). Write journal entries to describe and analyze the elements of music. Interpret personal feelings while listening to different styles of music. Discuss effects of music on themselves and peers.

Grade 4 Interdisciplinary Model Geography

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • create poems, stories, plays, or articles about life in Kentucky. Describe in journals how the writing reflects cultures, periods, and styles. 	<p>Students will</p> <ul style="list-style-type: none"> • use different media and art processes to develop props for dramatic works. Discuss how art work reflects specific cultures. 	<p>Students will</p> <ul style="list-style-type: none"> • create dances to animate characters from dramatic Kentucky works. Present to class. Explain how dances expresses culture and history of Kentucky people. 	<p>Students will</p> <ul style="list-style-type: none"> • present dramatic readings, visual arts, and dances. Identify cultures, periods, and styles.
<ul style="list-style-type: none"> • participate in different dances (e.g., folk, square, ethnic). Record thoughts and feelings about dances in journals. Discuss relationships between the elements of dance and the expression of ideas and emotions. 	<ul style="list-style-type: none"> • create dances with repetition and variety. Perform dances at community functions. Create journal entries to describe how dance differs from other physical movements. 	<ul style="list-style-type: none"> • write directions for doing one of the dances learned in class. Compile photo journals. Send directions and journals to friends in other schools. 	<ul style="list-style-type: none"> • describe dance styles, cultures, and purposes in journal entries.
<ul style="list-style-type: none"> • listen to different styles of music. Identify characteristics of each style. Record findings in graphic organizers. 	<ul style="list-style-type: none"> • compare styles of music. Describe how the elements of music help identify styles. 	<ul style="list-style-type: none"> • compose a musical piece in their favorite style. 	<ul style="list-style-type: none"> • write articles describing how elements of music are used in various musical styles.

Grade 4 Interdisciplinary Model

Geography

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Numbers, Integers and Place Value, Number Computation (2.7, 2.8, 2.12)</p> <p>Algebraic Ideas (2.11)</p>	<p>How are numbers used to represent information in my daily life?</p>	<p>Students will Mathematics</p> <ul style="list-style-type: none"> • read, write, and model numbers through 1,000,000 developing place value for 100,000 and millions. • order and compare numbers to 1,000,000. • understand relative magnitudes of numbers to 1,000,000. • understand and apply procedures for adding, subtracting, multiplying, and dividing whole numbers. • represent and describe relationships through the use of ordered pairs. • determine factors and multiples of whole numbers. • choose appropriate means to collect and represent data. • add, subtract, multiply, and divide whole numbers. • determine factors and multiples of a whole number. <p>English/Language Arts</p> <ul style="list-style-type: none"> • apply writing-to-learn and writing-to-demonstrate-learning strategies. • use information from various sources to produce writing. 	<p>Students will</p> <ul style="list-style-type: none"> • investigate relative magnitude of 1,000,000. Collect 1,000,000 items (e.g., computer holes, bottle caps, soda can pull tabs). Determine time required to walk 1,000,000 steps. • use research tools to collect data from Kentucky regions. Determine impact of important issues (e.g., tobacco farming) on different regions. Develop research questions, means of collecting data, and charts to record information. Explore trends and patterns in data. • examine Kentucky maps drawn on grid paper. Identify important locations (e.g., Frankfort) using ordered pairs of numbers such as (2, 7) and (9, 15). <p style="text-align: right;"><i>Continued on page 88</i></p>

Grade 4 Interdisciplinary Model Geography

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> participate in mini-lessons on estimation strategies. 	<p>Students will</p> <ul style="list-style-type: none"> read, write, and model whole numbers for 0-1,000,000. Using Kentucky census data, select 10 countries whose populations, when added together, equal 1,000,000. Create charts to order populations from largest to smallest. 	<p>Students will</p> <ul style="list-style-type: none"> use resource materials to compose real-world investigations demonstrating one-hundred thousand (e.g., travel 100,000 miles). Develop representations (e.g., pictorial model with keys, tables) to show their work. 	<p>Students will</p> <ul style="list-style-type: none"> order and compare a set of census data that includes numbers up to 1,000,000.
<ul style="list-style-type: none"> use resource tools to create charts of statistical information (e.g., square miles, population, forested areas, amount of crops grown) about each Kentucky region. 	<ul style="list-style-type: none"> choose set of regional statistical data. Order from largest to smallest. 	<ul style="list-style-type: none"> use Kentucky regional data to create addition, subtraction, and multiplication problems for classmates. Use various tools (e.g., calculators, mental math, pencil paper) to solve problems. 	<ul style="list-style-type: none"> choose a set of statistical data from neighboring states from largest to smallest. Compare to Kentucky data.
<ul style="list-style-type: none"> use resources (e.g., grid paper, trundle wheels, meter sticks) to design map of classroom. Identify placement of classroom objects on map. Determine ordered pairs that objects identify. 	<ul style="list-style-type: none"> design maps of school. Identify placement of important rooms (e.g., library). Determine ordered pairs that identify rooms. 	<ul style="list-style-type: none"> develop ordered pairs to create mystery picture on grid paper. Write instructions to complete picture. Trade mystery pictures with peers. 	<ul style="list-style-type: none"> locate places on Kentucky map using ordered pairs provided by teacher.

Grade 4 Interdisciplinary Model Geography

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Numbers, Integers and Place Value, Number Computation (2.7, 2.8, 2.12)</p> <p>Algebraic Ideas (2.11)</p>	<p><i>Continued from page 86</i></p> <p>How are numbers used to represent information in my daily life?</p>	<p>Students will Mathematics</p> <ul style="list-style-type: none"> • read, write, and model numbers through 1,000,000 developing place value for 100,000 and millions. • order and compare numbers to 1,000,000. • understand relative magnitudes of numbers to 1,000,000. • understand and apply procedures for adding, subtracting, multiplying, and dividing whole numbers. • represent and describe relationships through the use of ordered pairs. • determine factors and multiples of whole numbers. • choose appropriate means to collect and represent data. • add, subtract, multiply, and divide whole numbers. • determine factors and multiples of a whole number. <p>English/Language Arts</p> <ul style="list-style-type: none"> • apply writing-to-learn and writing-to-demonstrate-learning strategies. • use information from various sources to produce writing. 	<p>Students will</p> <ul style="list-style-type: none"> • discuss the use of factor trees to show multiples and factors. Create models of factor trees.

Grade 4 Interdisciplinary Model Geography

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • using their county agricultural data, create a factor tree for one crop. 	<p>Students will</p> <ul style="list-style-type: none"> • using a class of 24 students, create factor trees that could be used to form groups (e.g., study, sports). 	<p>Students will</p> <ul style="list-style-type: none"> • make factor trees given four numbers. List factor pairs. 	<p>Students will</p> <ul style="list-style-type: none"> • respond to open-response items involving factoring.

Grade 4 Interdisciplinary Model

Geography

Sample Extensions for Diverse Learners

Yadria immigrated from Mexico six months ago and has beginning English language skills. With an English speaking partner, she will research news from magazines, the Internet, and newspapers for images of Hispanic barrios (neighborhoods). She will tell her partner the reasons why her family immigrated to the United States, and the two will then compare the images they found with images of neighborhoods in their town. They will share their findings with the class. Yadria's final activity will be to create a poem about her immigration experience. She will teach the class to read her poem in Spanish (*Types of extensions: purpose and appropriateness, complexity, environment, order of learning, procedures and routines, resources and materials, demonstration of knowledge, level of support, participation, motivation*).

Dennis and Kenny need more time to complete activities and altered pacing of instruction. Prior to the class activity utilizing geographic tools, Dennis and Kenny will be given individual instruction on process and procedures of their use. This extra practice will increase their confidence to share knowledge with peers and provide additional opportunities and time to practice any geographic tools. (*Types of extensions: pace, level of support, participation, procedures and routines*).

Heather, Charlie, P. J., and Eric need supports to activate their prior knowledge, take notes, when reading or viewing visual images, and organize their thoughts. The teacher constructs an "Anticipation Guide" for various newspaper articles. This includes four to five statements related to the five themes of geography. Heather, Charlie, P. J., and Eric are asked to respond to the questions either agreeing or disagreeing with the statements. They discuss their viewpoints with two other classmates prior to reading the articles. As a group, they reach a consensus on their responses. As they read the articles they look for information that supports or refutes their group consensus. They use a scaffolded t-chart to take notes as they read. They work in their group to compare and discuss their observations completing an individual and a group t-chart (*Types of extensions: complexity, environment, order of learning, procedures and routines, resources and materials, demonstration of knowledge, level of support*).

Caitlin and Evan have a keen interest in and talents related to the arts. They will present examples of literature, art, music and architecture that reflect geographical regions to their class and parent-teacher association (*Types of extensions: purpose and appropriateness, complexity, magnitude, participation, motivation, demonstration of knowledge, procedures and routines, resources and materials*).

As a result of their consultation and planning meeting, the classroom teacher and gifted and talented teacher will arrange for the gifted and talented teacher to conduct a series of pullout sessions to work with selected gifted and talented students with diagnosed needs for advanced reasoning and research, and with academic interests in science and social studies. These students will prepare and participate in a formal two-minute affirmative, two-minute negative, one-minute rebuttal debate on environmental issues relevant to the classroom curriculum. The students will perform for their classmates and judges and meet with the gifted and talented teacher for debriefing and evaluation (*Types of extensions: purpose and appropriateness, environment, resources and materials, demonstration of knowledge, level of support, complexity, participation, time, magnitude*).

A group of students who have demonstrated mastery of concepts in a pretest and who need opportunities to solve challenging problems will divide into pairs or work independently to design Kentucky treasure hunt challenges for each other and students in grade five to solve. Teacher and students will agree upon the number of kinds of tasks to be included (e.g., locations involving use of grid, ordered pairs, latitude and longitude, populations under 2000, famous landmark, natural resources, home of a famous person). They will agree upon scoring and competition rules to be used when students attempt to solve the tasks. Students will write clues and keep bibliographic records to verify sources for answers (*Types of extensions: purpose and appropriateness, complexity, motivation, order of learning, procedures and routines, resources and materials, demonstration of knowledge, level of support, participation*).

Grade 4 Interdisciplinary Model

Geography

Resources

Internet Addresses:

<http://www.meat.nsw.gov.au/nlrs/nlrs.htm> (livestock prices)

<http://www.ces.uga.edu/Agricultur./agecon/MARKETDATA.html> (market news and data for cotton, dairy, fruits/vegetables, livestock, grain, and peanuts)

<http://www.state.ky.us/tour/tour.htm> (Tour Kentucky)

<http://www.state.ky.us/agencies/gov/symbols.htm> (Kentucky's state symbols)

<http://www.state.ky.us/> (Kentucky's homepage)

<http://www.state.ky.us/agencies/parks/constsq2.htm> (Constitution Square State Historic Site)

NOTES

Grade 4 Interdisciplinary Model
Government and Historical Change over Time

NOTES

Grade 4 Interdisciplinary Model

Government and Historical Change Over Time

Broad-Based Theme:	Change Over Time - Government and History
Content Areas:	Social Studies, English/Language Arts
Supplemental Content Areas:	Arts and Humanities (Visual Arts, Drama, Dance, Music), Mathematics

Unit Framework Overview:

In this unit framework, students explore historical changes in Kentucky and identify the government's role in a democracy. Sample activities guide students through an inquiry process to consider

- historical changes that have affected them and their communities;
- governmental roles in their community and state, how the arts reflect history; and
- experience situations involving basic issues of justice, equality, responsibility, choice, and freedom.

Pages of the unit frameworks are arranged in pairs. On the left page of each pair are guiding questions along with related academic expectations and correlations to the *Program of Studies*. The unit framework is organized around guiding questions that direct teachers' choices of activities. Students should be able to answer these questions by the end of the unit framework.

Sample activities for each instructional setting (e.g., whole group, flexible groups, learning centers, independent work) are listed in columns. Activities are aligned horizontally to demonstrate how instruction moves from guided or facilitated learning to independent learning and self-reflection by students. Sample activities are varied to support students' individual learning styles and interests. Students work in appropriate large and small cooperative groups and as independent learners. While sample activities address *Program of Studies* content they are not intended to be comprehensive. Some content bullets included in the unit frameworks designate skills and processes (e.g., mathematical procedures and computations) that should be taught throughout the year but are not repeated in every framework. (See the *Curriculum and Evaluation Standards for School Mathematics Addenda Series*, National Council of Teachers of Mathematics, for additional activities in mathematics. The *National Science Education Standards* provide more details and explanations regarding scientific inquiry, conceptual understandings, and applications/connections.) Teachers are responsible for planning instruction that includes appropriate extensions for unit framework activities to address the interests, needs, and abilities of all students including gifted and talented, children with disabilities, and those with limited English proficiency.

Guiding Questions:

- How have my state and region changed throughout history?
- How does government affect my community and state?
- How can I, as a citizen, exercise my rights and responsibilities through active participation in government?
- How is history reflected through the arts?
- How can change over time be demonstrated through the arts?
- How do the properties of geometric shapes determine their function in my world?
- How is geometry reflected in the architecture of my community?
- How can change over time be represented in math?

Grade 4 Interdisciplinary Model
Government and Historical Change over Time

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Inquiry (1.1)</p> <p>Reading (1.2)</p> <p>Writing (1.11)</p> <p>Government and Civics (2.14, 2.15)</p> <p>Group Responsibility (4.2)</p> <p>Rights and Responsibilities (4.4)</p> <p>Visual Arts (1.13, 2.22, 2.26)</p> <p>Music (1.14, 2.22, 2.26)</p> <p>Dance (1.15, 2.22, 2.26)</p> <p>Drama (2.22 - 2.26)</p>	<p>How have my state and region changed throughout history?</p>	<p>Students will</p> <p>Social Studies</p> <ul style="list-style-type: none"> • develop understanding of Kentucky's early development. • explore interpretations of Kentucky history. • examine cause/effect historical relationships. • explore reasons for settling in Kentucky. • recognize how Kentucky life-style changes over time. • understand that specific symbols represent ideas in Kentucky's history. <p>Arts and Humanities</p> <ul style="list-style-type: none"> • use appropriate terminology to describe art works from different cultures, periods, and styles. • recognize purposes for creating works of art. • recognize that artists express selves in different styles. • use a variety of media and processes to produce two- and three-dimensional works of art. • use developmentally appropriate performance techniques, practices, and music elements to communicate ideas and emotions. • recognize and develop elements of music. • examine effects of time, place, and personality on music and performance. <p>English/Language Arts</p> <ul style="list-style-type: none"> • employ reading strategies. • understand and respond to a variety of reading materials. • write transactive pieces. • apply writing-to-learn and writing-to-demonstrate-learning strategies. • prepare and deliver formal presentations. • use technology as a research tool. • take notes from research. • select and read materials for enjoyment. 	<p>Students will</p> <ul style="list-style-type: none"> • use K-W-L charts to identify students knowledge, needs, and reflections about changes in Kentucky's history (e.g., settlement patterns, diversity of population). • listen to stories read by teachers (e.g., <i>Follow the River</i>, <i>Panther in the Sky</i>, <i>The Frontiersman</i>) to gain perspective of Kentucky's early settlement. Look at series of events and dates in Kentucky history. Chronologically organize events and dates into time lines. <p style="text-align: right;"><i>Continued on page 92</i></p>

Grade 4 Interdisciplinary Model

Government and Historical Change Over Time

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • use research tools to analyze the settlement of Kentucky relative to different groups of people (e.g., settlers, African Americans, Native Americans, women). Create multimedia presentations to share with class, school, or community describing early settlements. • research events from time line to determine cause-and-effect relationships (e.g., Daniel Boone's exploration establishes Fort Boonesboro.). Create class presentations of events (e.g., video, mock interviews, dramatization, multimedia) to share with school or community. Explain events and their effects on our lives today. 	<p>Students will</p> <ul style="list-style-type: none"> • use research tools to identify specific symbols slogans, buildings, or monuments in Kentucky (e.g., flag, state symbols, motto, floral clock, capital, Churchill Downs) Develop art work (e.g., dance, story telling, art, role play) to present information during open house. • read stories and watch videos about current or historical events. Analyze how each event impacts life in Kentucky today. Compare events in graphic organizers. 	<p>Students will</p> <ul style="list-style-type: none"> • create social studies journals. Begin by recording thoughts or essential questions addressing change over time in Kentucky's history (e.g., architecture, culture, social institutions). Design journal covers illustrating one or more changes. • read articles and take notes about current events in the state. Develop articles predicting how events will affect Kentucky's future. 	<p>Students will</p> <ul style="list-style-type: none"> • plan, organize, and conduct presentations for open house using various art forms, media, or storytelling to present historical facts about Kentucky's history. • develop articles about current events in Kentucky predicting short- and long-term effect on Kentucky's future.

Grade 4 Interdisciplinary Model
Government and Historical Change over Time

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Inquiry (1.1)</p> <p>Reading (1.2)</p> <p>Writing (1.11)</p> <p>Government and Civics (2.14, 2.15)</p> <p>Group Responsibility (4.2)</p> <p>Rights and Responsibilities (4.4)</p> <p>Visual Arts (1.13, 2.22, 2.26)</p> <p>Music (1.14, 2.22, 2.26)</p> <p>Dance (1.15, 2.22, 2.26)</p> <p>Drama (2.22 - 2.26)</p>	<p><i>Continued from page 90</i></p> <p>How have my state and region changed throughout history?</p>	<p>Students will</p> <p>Social Studies</p> <ul style="list-style-type: none"> • develop understanding of Kentucky's early development. • explore interpretations of Kentucky history. • examine cause/effect historical relationships. • recognize how Kentucky lifestyle changes over time. • explore reasons for settling in Kentucky. <p>Arts/Humanities</p> <ul style="list-style-type: none"> • describe art works from different cultures, periods, and styles. • recognize purpose of art. • recognize that artists express selves in different styles. • use a variety of media and processes. • develop performance techniques. • recognize and develop elements of music. <p>English/Language Arts</p> <ul style="list-style-type: none"> • employ reading strategies. • understand and respond to a variety of reading materials. • write transactive pieces. • apply writing-to-learn and writing-to-demonstrate-learning strategies. • prepare and deliver formal presentations. • use technology as a research tool. • take notes from research. • select and read materials for enjoyment. 	<p>Students will</p> <ul style="list-style-type: none"> • discuss Kentucky composers and musicians and examples of their work. Compare characteristics in graphic organizers. • research and discuss issues and problems (e.g., Native Americans, isolationism) from Kentucky's past that had statewide implications. Analyze solutions and outcomes.

Grade 4 Interdisciplinary Model

Government and Historical Change Over Time

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> analyze elements of music and describe purposes of music written about Kentucky's past and present. Examine effects of time, place, and personality on music and performance. examine current problems (e.g., strip mining, tobacco, education) that have statewide implications. Write articles for school newspapers identifying and evaluating solutions. 	<p>Students will</p> <ul style="list-style-type: none"> develop song lyrics comparing current and historical events in our state. generate interview questions for diverse groups (e.g., senior citizens, Native Americans, African Americans, community leaders) about Kentucky's past and present. Organize and participate in class interviews. 	<p>Students will</p> <ul style="list-style-type: none"> use simple instruments to create melodies for their songs about Kentucky's past and present. use group generated questions to interview acquaintances about Kentucky's past and present events. Orally share findings. Select and read materials about Kentucky's past for enjoyment. 	<p>Students will</p> <ul style="list-style-type: none"> develop presentations of Kentucky music, including lyrics and melodies. respond to open-response situations about Kentucky's statehood conflicts and resolutions.

Grade 4 Interdisciplinary Model
Government and Historical Change over Time

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Inquiry (1.1)</p> <p>Reading (1.2)</p> <p>Writing (1.11)</p> <p>Government and Civics (2.14, 2.15)</p> <p>Group Responsibility (4.2)</p> <p>Rights and Responsibilities (4.4)</p> <p>Speaking/Listening/Observing (1.3, 1.4, 1.12)</p> <p>Visual Arts (1.13, 2.22, 2.26)</p> <p>Music (1.14, 2.22, 2.26)</p> <p>Dance (1.15, 2.22, 2.26)</p> <p>Drama (2.22 - 2.26)</p>	<p>How does government affect my community and state?</p> <p>How can I, as a citizen, exercise my rights and responsibilities through active participation in government?</p> <p>How is history reflected through the arts?</p>	<p>Students will Social Studies</p> <ul style="list-style-type: none"> • understand the basic purpose of government. • recognize levels and branches of government. • identify the branches of government at each level and recognize the offices associated with the branches. • understand that individuals have rights/responsibilities. • recognize individuals need to participate in government. • understand that specific symbols, slogans, buildings, and monuments represent ideas and events in Kentucky's history. <p>Art and Humanities</p> <ul style="list-style-type: none"> • use a variety of media and art processes to produce two- and three-dimensional works of art. • use developmentally appropriate performance techniques, practices, and music elements to communicate ideas and emotions. <p>English/Language Arts</p> <ul style="list-style-type: none"> • use technology as a research tool. • recognize purpose and effectiveness of both formal and informal messages. • write transactive pieces. • apply writing-to-learn and writing-to-demonstrate-learning strategies. • use information from technology and other sources to produce writing. • apply listening, speaking, and observing skills. 	<p>Students will</p> <ul style="list-style-type: none"> • interview city and state officials via e-mail or telephone. Investigate reasons behind laws for community or state. • participate in field studies to investigate levels of state and local branches of government. Create bulletin boards and/or scrapbooks to post articles concerning local or state policies and governmental issues. • conduct class elections and hold periodic class meetings using parliamentary procedure and peer mediation. • identify purposes and style of community statues, public artwork, or political cartoons.

Grade 4 Interdisciplinary Model

Government and Historical Change Over Time

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • write and perform puppet shows to explain how laws impact daily life in school, class, community, or state. • role-play various governmental occupations and interview characters about their role in the government. • examine platforms of candidates running for class office, based on their slogans, speeches, and debates. • explore media and techniques used in the design of statues, public art work, or political cartoons. Research historical significance of statues, art work, and cartoons. 	<p>Students will</p> <ul style="list-style-type: none"> • develop graphic organizers outlining procedures for creating laws. • create diagrams to share information on levels and branches of government. Present to class. • run for class offices developing platform and multimedia campaigns. Appoint campaign work groups to assist. • use Internet and other resources to investigate editorial cartoons. Design cartoons for school paper explaining current political issues. 	<p>Students will</p> <ul style="list-style-type: none"> • develop articles to explain how laws affect their rights as individuals. • interview community or state leaders about their governmental duties and develop school displays. • use persuasive techniques to develop articles for school paper about candidates. • create statues, art works, or editorial cartoons representing an event or character from history. Display works in class museum. Develop articles explaining impact of this figure on Kentucky history. 	<p>Students will</p> <ul style="list-style-type: none"> • develop articles, using effective writing criteria, to examine how laws affect rights of individuals. • respond to open-response situations about government at school, community, and state levels. • develop persuasive articles, using effective writing criteria, presenting candidates platforms and positions on issues. • design an argument for constructing a community statue honoring a community member who has contributed positively. Develop reflective pieces explaining significance, purpose, style, media, and techniques of original art.

Grade 4 Interdisciplinary Model
Government and Historical Change over Time

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Historical Perspective (2.20)</p> <p>Cultural Heritage (2.25)</p> <p>Visual Arts (1.13, 2.22, 2.26)</p> <p>Speaking/Listening/Observing (1.3, 1.4, 1.12)</p> <p>Writing (1.11)</p> <p>Visual Arts (1.13, 2.22, 2.26)</p> <p>Music (1.14, 2.22, 2.26)</p> <p>Dance (1.15, 2.22, 2.26)</p> <p>Drama (2.22 - 2.26)</p>	<p>How can change over time be demonstrated through the arts?</p>	<p>Students will Arts and Humanities</p> <ul style="list-style-type: none"> • use appropriate terminology to describe the functions of the elements of art (line, shape, color, form, texture, space, value) and principles of design. • use appropriate terminology to describe art works from different cultures, periods, and styles. • use elements of music. • identify specific cultures, purposes and/or styles of dance. • create a movement using the elements of dance. 	<p>Students will</p> <ul style="list-style-type: none"> • research ways people in different eras incorporated art into their everyday lives. Invite local folk artists, who are carrying on related traditions, to demonstrate their crafts. Compare use of elements of art and principles of design in works of local artists to historical works of the past. Use graphic organizers to record changes over time.

Grade 4 Interdisciplinary Model
Government and Historical Change Over Time

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • use various resources to investigate the origins of folk dances, bluegrass music, or folk music. Create and perform songs or dances to demonstrate elements. 	<p>Students will</p> <ul style="list-style-type: none"> • observe quilt patterns or read books about quilts. Identify how history is reflected in the designs. Design a paper quilt to identify the changes they have gone through in their lives. 	<p>Students will</p> <ul style="list-style-type: none"> • write lyrics and develop melodies based on familiar tunes to tell about their life as a pioneer. Perform alone or with peers. 	<p>Students will</p> <ul style="list-style-type: none"> • respond in journals to questions (e.g., Imagine what people would have done before television. How did they learn about each other?).

Grade 4 Interdisciplinary Model
Government and Historical Change over Time

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Geometry (2.8, 2.9, 2.12)</p> <p>Writing (1.11)</p> <p>Reading (1.2)</p>	<p>How do the properties of geometric shapes determine their function in my world?</p>	<p>Students will Mathematics</p> <ul style="list-style-type: none"> • analyze structures of geometric figures. • investigate geometric relationships. • compare and explore nonstandard units for measuring angles. <p>English/Language Arts</p> <ul style="list-style-type: none"> • apply writing-to-learn and writing-to-demonstrate-learning strategies. • understand and respond to a variety of reading materials. 	<p>Students will</p> <ul style="list-style-type: none"> • investigate relationships between two parallel lines drawn on board. Brainstorm lists of objects (e.g., railroad tracks) that have parallel lines and segments. Investigate properties of parallelograms (e.g., square, rectangle, trapezoid, rhombus, parallelogram) listing similarities and differences. Identify lines and segments in objects (e.g., building design, sidewalks) located in their community, region, or state. • investigate right angles in objects around them by folding pieces of paper to design square corners. Discuss solutions and use folded paper tool to find objects in classroom that have right angles and those that have angles less than or more than square corners. Develop class charts.

Grade 4 Interdisciplinary Model

Government and Historical Change Over Time

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> investigate polygons, points, line segments, lines, rays, perpendicular lines, parallel lines, angles, symmetry, and congruence. Compare concepts in graphic organizers. Develop geometry dictionaries with illustrations to identify properties of each term. review square corners as right angles. Draw two lines thought to intersect and form right angles and angles less than and more than right angles. Check with right angle tool to verify right angles. Identify number of right angles in triangles and other polygons using geoboards. Construct figures with none, one, two, or more right angles. 	<p>Students will</p> <ul style="list-style-type: none"> read <i>The Greedy Triangle</i> and discuss geometry in everyday objects. Develop charts to demonstrate objects in world that contain examples of congruent shapes, symmetry, right angles, and lines (e.g., perpendicular, parallel, segments). investigate right angles found in solid figures (e.g., cube, triangular prism, rectangular prism). Develop graphic organizers (e.g., chart, table) to record number of right angles and angles greater and less than right angles in each geometric shape. Explore angles in other solids. Record results. 	<p>Students will</p> <ul style="list-style-type: none"> explore symmetrical shapes using mirrors. Find pictures of objects from magazines that are symmetrical. Cut pictures in half and draw missing half. use 3 x 3 grid paper to represent city blocks, labeling right bottom corner A and left upper corner B. Draw three paths that taxicabs could take from A to B with varying numbers of right angles. 	<p>Students will</p> <ul style="list-style-type: none"> respond in journals to questions about geometric designs used in buildings and how geometric designs enhance buildings (e.g., If you had to tell a child from another state about the geometry used to design your school building, what would you say?). answer the question, Why do you think walls are built at right angles to the grounds? Discuss answers in class.

Grade 4 Interdisciplinary Model
Government and Historical Change over Time

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Geometry (2.8, 2.9, 2.12)</p> <p>Measurement (2.10)</p> <p>Writing (1.11)</p>	<p>How is geometry reflected in the architecture of my community?</p> <p>How can change over time be represented in math?</p>	<p>Students will Mathematics</p> <ul style="list-style-type: none"> • analyze geometric figures. • investigate geometric relationships. • choose appropriate means to collect and represent data • graph points on a number line. • pose questions, collect, organize, display data. • draw conclusions based on data. • explore line graphs to show change over time. <p>English/Language Arts</p> <ul style="list-style-type: none"> • apply writing-to-learn and writing-to-demonstrate-learning strategies • use technology as a research tool. • identify information and resources needed to address questions. • write transactive pieces. 	<p>Students will</p> <ul style="list-style-type: none"> • participate in field studies led by community members (e.g., architects, builders, historians). Chart frequency of designs and use of familiar geometric properties and shapes in the construction of buildings. • investigate history of buildings in their community. Develop time lines to show age of buildings. Calculate average age.

Grade 4 Interdisciplinary Model

Government and Historical Change Over Time

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> analyze structure of geometric figures and investigate geometric relationships using information from community field studies. Devise methods to illustrate individual geometric figures used in the design of buildings (e.g., 3 x 5 drawings, toothpicks, architectural blocks, straws). participate in mini-lessons to learn how to find the mean of data sets. 	<p>Students will</p> <ul style="list-style-type: none"> design and construct two- and three-dimensional models of buildings that reflect architectural styles or periods. Write transactive pieces to identify styles of the historical periods. use resources to investigate age of historical buildings in Kentucky. Develop time lines and find average age of buildings. Compare with community data. Present findings to class. 	<p>Students will</p> <ul style="list-style-type: none"> develop oral or written presentations to explain to other fourth-grade students why geometry (e.g., congruence, symmetry, angles, shapes, parallel lines) is important in architecture. develop investigations to identify changes (e.g., buildings, business ventures, cost of real estate, doctor visits, utility cost, car prices) over time in their community or state. Design questions, collect, organize, and display data. Create multimedia presentations. 	<p>Students will</p> <ul style="list-style-type: none"> develop writing pieces to analyze geometry in architecture. find the mean of data sets provided by the teacher. Explain in journals the procedure used to find the mean.

Grade 4 Interdisciplinary Model

Government and Historical Change Over Time

Sample Extensions for Diverse Learners

Dakota and McCawley participate with a group of three other students. In learning centers, their group shares pictures that represent Kentucky symbols, monuments, and buildings. They draw and/or paste pictures of each to develop a picture book. They are able to participate with peer assistance (*Types of extensions: purpose and appropriateness, complexity, participation, level of support, resources and materials, demonstration of knowledge, procedures and routines, motivation*).

Beth and Keith read, write, and learn at a rate comparable to their peers but are easily distracted. They have difficulty focusing on and completing tasks. Their performance is inconsistent and at times they appear disorganized. Beth and Keith focus better when actively participating in learning. They assist the teacher in keeping a record of questions and answers. The teacher uses positive refocusing techniques to keep their attention on the task. Since the activity is divided into smaller sections, Beth and Keith tend to stay focused. Students use additional time to interact and generate more questions and solutions (*Types of extensions: environment, pace, time, level of support, participation*).

Iliana has intermediate English listening and speaking skills and beginning reading and writing skills. Prior to writing and performing a puppet show explaining how laws impact daily life with other students, she observes other puppet shows. In her group she chooses two laws that have impacted her life since she immigrated to Kentucky. She works with the ESL teacher and librarian to find research material (e.g., Internet, books, articles, videos) on the laws. She uses a concept map and bilingual dictionary as she develops the puppet show script with her peers. The teacher works with her to incorporate targeted vocabulary and language structures in her script (*Types of extensions: purpose and appropriateness, complexity, order of learning, environment, procedures and routines, level of support, participation, motivation*).

Will learns quickly and has strong math skills. He reads slowly and has not developed efficient strategies to scan or skim print materials, or monitor comprehension of what he reads. This impacts the rate at which he accesses and processes information. While developing more efficient reading strategies, Will uses visuals (e.g., pictures, maps, computer graphics and charts, drawings) and oral presentations (e.g., books-on-tape, peer discussions, interviews, multimedia, videotapes) of information to evaluate, present, and demonstrate understanding of information. His roles and responsibilities in groups are assigned after considering the additional time he needs to complete his task. He analyzes the settlement of Kentucky relative to one group rather than multiple groups. He uses supportive technology (e.g., voice-to-text, computer-generated organizers, drawing programs) to complete his assignment for the group (*Types of extensions: complexity, magnitude, time, environment, procedures and routines, resources and materials, level of support*).

A group of students identified as academically gifted in math need opportunities to explore and apply creative thinking and problem solving strategies in math. They will develop pictorial representations of community architecture using digital cameras. Using the drawing features of an integrated software package, students will replicate the facade of a building found in a student-selected picture. They will present to their class an analysis of the geometric features and patterns found in the architectural structure (*Types of extensions: participation, level of support, demonstration of knowledge, resources and materials, procedures and routines, order of learning, magnitude*).

Vanessa is a talented violin student. Because of her interest in music coupled with a high level of curiosity, her teacher has worked with the music teacher to arrange contact with a dulcimer society and a dulcimer maker in Berea. Vanessa will research the development of this instrument, compare the violin and dulcimer, and learn to play tunes on the dulcimer that she knows on the violin. She will share her knowledge and demonstrate both instruments for the class (*Types of extensions: purpose and appropriateness, motivation, order of learning, resources and materials, level of support, demonstration of knowledge*).

Grade 4 Interdisciplinary Model
Government and Historical Change Over Time

Resources

Internet Addresses:

<http://www.lrc.state.ky.us/home.htm> (Kentucky Legislature)

<http://www.uky.edu/LCC/HIS/?KATH?Kylinks.html> (Kentucky Association of Teachers of History, history of areas of Kentucky)

<http://www.uky.edu/LCC/HIS/scraps/kymap1786.html>

<http://www.recreation.gov/>

<http://www.stolaf.edu/network/iecc/>
(internet pen pals)

<http://www.law.cornell.edu/constitution/constitution.overview.html> (United States Constitution)

<http://www.house.gov/Educat.html> (legislative process, laws, Declaration of Independence)

<http://www.lrc.state.ky.us/const/124.htm> (Kentucky Constitution)

NOTES

Grade 5 Interdisciplinary Model
Health and Personal Wellness

NOTES

Grade 5 Interdisciplinary Model

Kentucky Water Systems

Broad-Based Theme:	Water Systems
Content Areas:	Science, Social Studies
Supplemental Content Areas:	English/Language Arts, Health, Mathematics

Unit Framework Overview:

In this unit framework, students investigate the connections among Kentucky's water systems. Students explore how Kentucky's rivers and streams have been primary attractions for people throughout Kentucky's history. Sample activities guide students through an inquiry process to

- learn about current environmental issues in their communities;
- become responsible members of a family, work group, or community; and
- think and solve a variety of problems.

Pages of the unit frameworks are arranged in pairs. On the left page of each pair are guiding questions along with related academic expectations and correlations to the *Program of Studies*. Unit frameworks are organized around guiding questions that direct teachers' choices of activities. Students should be able to answer these questions by the end of the unit framework.

Sample activities for each instructional setting (e.g., whole group, flexible groups, learning centers, independent work) are listed in columns. Activities are aligned horizontally to demonstrate how instruction moves from guided or facilitated learning to independent learning and self-reflection by students. Sample activities are varied to support students' individual learning styles and interests. Students work cooperatively in large and small groups and as independent learners. While sample activities address *Program of Studies* content they are not intended to be comprehensive. Some content bullets included in the unit frameworks designate skills and processes that should be taught throughout the year (e.g., mathematical procedures and computations) but are not repeated in every framework. (See the *Curriculum and Evaluation Standards for School Mathematics Addenda Series*, National Council of Teachers of Mathematics, for additional activities in mathematics. The *National Science Education Standards* provides more detail and explanations regarding scientific inquiry, conceptual understandings, and applications/connections.) Teachers are responsible for planning instruction that includes appropriate extensions for unit framework activities to address the interests, needs, and abilities of all students including gifted and talented, children with disabilities, and those with limited English proficiency.

Guiding Questions:

- What are the sources of water in my community? How can I help protect them?
- What are the biggest problems associated with water quality in my state?
- How can mathematics be used to solve real-world problems?

Grade 5 Interdisciplinary Model Kentucky Water Systems

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.1-2.6)</p> <p>Writing (1.11)</p> <p>Reading (1.2)</p> <p>Geography (2.19)</p> <p>Productive Team Membership (4.2)</p>	<p>Why are the sources of water in my community?</p> <p>How can I help protect them?</p>	<p>Students will</p> <p>Social Studies</p> <ul style="list-style-type: none"> • use variety of tools to obtain and present geographic information. • understand that individuals have rights and responsibilities. <p>Science</p> <ul style="list-style-type: none"> • recognize that cells carry on functions needed to sustain life. • recognize relationship between structure and function. • investigate living organisms' effects on the Earth system. <p>All <i>Program of Studies</i> Scientific Inquiry bullets are included in this guiding question.</p> <ul style="list-style-type: none"> • recognize how science is used to understand populations, resources, and environments. • examine the role of science in explaining and predicting natural events. <p>English/Language Arts</p> <ul style="list-style-type: none"> • apply writing-to-learn and writing-to-demonstrate-learning strategies. • write transactive pieces. • use technology to access information. • prepare and deliver formal presentations. • identify sources by title and author. • identify meaning from reading materials. 	<p>Students will</p> <ul style="list-style-type: none"> • list and discuss all benefits received from water resources. Identify services or products related to various sources of water pollution in their communities or across Kentucky. Discuss whether communities can have both clean water and strong economies. <p style="text-align: right;"><i>Continued on page 108</i></p>

Grade 5 Interdisciplinary Model Kentucky Water Systems

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • prepare illustrated time lines of major laws that protect water quality. Discuss why changes are needed periodically. 	<p>Students will</p> <ul style="list-style-type: none"> • sketch watersheds in their county. Prepare three-dimensional models. Identify where activities on land might affect water quality. Identify possible pollutants and how each affects water quality. Role-play town meetings in which community members debate land-use and water quality issues. 	<p>Students will</p> <ul style="list-style-type: none"> • list things they do everyday that contribute to water pollution. Write articles for local newspapers explaining what they have found out about the water in their adopted stream. Provide suggestions for improving the water quality. 	<p>Students will</p> <ul style="list-style-type: none"> • develop advertising campaigns (e.g., videotapes, posters, bumper stickers, marches) to encourage others to think about importance of Kentucky's rivers, streams, and lakes, and their responsibility in protecting these valuable resources. Present to class or school.

Grade 5 Interdisciplinary Model Kentucky Water Systems

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.1-2.6)</p> <p>Writing (1.11)</p> <p>Reading (1.2)</p> <p>Geography (2.19)</p> <p>Productive Team Membership (4.2)</p> <p>Developing New Knowledge (6.3)</p>	<p><i>Continued from page 106</i></p> <p>What are the sources of water in my community?</p> <p>How can I help protect them?</p>	<p>Students will</p> <p>Social Studies</p> <ul style="list-style-type: none"> • use variety of tools to obtain and present geographic information. • understand that individuals have rights and responsibilities. <p>Science</p> <ul style="list-style-type: none"> • recognize that cells carry on functions needed to sustain life. • recognize the relationship between structure and function. • investigate living organisms' effects on the Earth system. • All <i>Program of Studies</i> scientific inquiry bullets are included in this guiding question. • recognize how science is used to understand populations, resources, and environments. • examine the role of science in explaining and predicting natural events. <p>English/Language Arts</p> <ul style="list-style-type: none"> • apply writing-to-learn strategies. • write transactive pieces. • use technology to access information. • prepare and deliver formal presentations. • identify sources by title and author. • identify meaning from reading materials. 	<p>Students will</p> <ul style="list-style-type: none"> • organize class stream cleanup to focus attention on quality of community rivers or streams. Adopt stream and form water watch group. Contact Kentucky Water Watch Program. Divide into investigative teams. Identify rules and responsibilities of members. Determine questions to be answered and data to be collected (e.g., characteristics of watershed, physical indicators of pollution such as color, or odor; biological indicators of pollution such as presence of fish, macroscopic/microscopic organisms, riparian vegetation).

Grade 5 Interdisciplinary Model Kentucky Water Systems

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • practice investigative techniques (e.g., measure depth of water, speed of current, water temperature; observe, classify, and count organisms). Identify ways to record information on water quality. Participate in mini-lessons on the use of microscopes and magnifiers to investigate types of macro and microscopic organisms found in stream. Collect water samples and view with microscope or magnifier. 	<p>Students will</p> <ul style="list-style-type: none"> • create charts and graphs to display information collected. Draw pictures of organisms observed under magnifiers. Determine common characteristics of organisms. Explain in journals how organisms are adapted to life in water and to their particular habitat. Research organisms found in stream. Illustrate each organism on index cards. Identify organisms. Label structures and describe their function. 	<p>Students will</p> <ul style="list-style-type: none"> • compare single-celled organisms to multicellular organisms. Develop models of single-celled and multicellular organisms. Develop journal entries identifying life functions performed by cells. 	<p>Students will</p> <ul style="list-style-type: none"> • prepare essays about water quality in the study area. Include methods that could improve water quality. Identify sources of information by title and author. Develop presentations for class and community organizations.

Grade 5 Interdisciplinary Model Kentucky Water Systems

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Economics (2.18)</p> <p>Writing (1.11)</p> <p>Reading (1.2)</p> <p>Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.1-2.6)</p> <p>Making Connections (6.3)</p> <p>Problem Solving (5.5)</p>	<p>What are the biggest problems associated with water in my state?</p>	<p>Students will</p> <p>Science</p> <ul style="list-style-type: none"> • recognize the relationship between structure and function. • identify questions. • use appropriate equipment, tools, techniques, technology, and mathematics. • use evidence, logic, and scientific knowledge. • design and conduct different kinds of scientific investigations. • communicate designs, procedures, and results. • review and analyze scientific investigations. • demonstrate the role science plays in everyday life and explore different careers in science. <p>English/Language Arts</p> <ul style="list-style-type: none"> • write personal pieces. • develop questions to obtain information. • identify sources of information by title and author. <p>Health</p> <ul style="list-style-type: none"> • identify government health and safety regulations. • identify community guidelines that promote healthy environments. 	<p>Students will</p> <ul style="list-style-type: none"> • tour local wastewater treatment plants. Interview grandparents or older people to discuss how waste water was treated when they were young. Share findings with class and discuss progress made in water treatment. • simulate ground water contamination using glass fish tank filled with sand to represent soil. Work in groups to make wells of wire mesh cylinders placed in sand. Place drops of motor oil on top of sand. Pour water onto sand. Describe what happens to water level in well as water is added to sand or removed from well. Describe what happens to the oil. Test real well water. <p style="text-align: right;"><i>Continued on page 112</i></p>

Grade 5 Interdisciplinary Model Kentucky Water Systems

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> investigate how wastewater is treated, where it is discharged, and what can be done to reduce water pollution problems caused by wastewater. Identify government health and safety regulations that address wastewater problems. Chart community guidelines concerning sanitation. investigate effects industries or homes (e.g., chemicals, bacteria from waste, oil/gas drilling, coal mining, landfills, septic tanks, leaking underground tanks) have on ground water. Develop pictorial or graphic organizers to demonstrate effects. 	<p>Students will</p> <ul style="list-style-type: none"> investigate labels of common household products discharged down drains or toilets. Identify which contain toxic chemicals or phosphates. Identify environmentally friendly substitutes for products and report findings to class. Investigate environmentally friendly products that can be used in home and create school displays. design filtration systems using Earth materials (e.g., rock, sand, charcoal). Pollute water with various substances (e.g., food coloring, mud, grass, cooking oil). Test the system describing effectiveness of filtration methods. Present to class. Review and analyze effectiveness of peers' filtration system. 	<p>Students will</p> <ul style="list-style-type: none"> determine how wastewater from homes is treated, (e.g., treatment plant, septic tank). Trace and label path wastewater takes from their houses to final discharge point. Identify ways their family could change habits to decrease pollution problems caused by wastewater. Develop posters to illustrate findings. investigate the time, jobs, electricity, land, and other resources necessary to clean up polluted water. Prepare multimedia presentations for school. 	<p>Students will</p> <ul style="list-style-type: none"> write personal pieces reflecting on changes they have made to improve water quality. write articles describing importance of groundwater in Kentucky. Include major threats to groundwater and necessary protection methods.

Grade 5 Interdisciplinary Model Kentucky Water Systems

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Rights and Responsibilities (4.4)</p> <p>Community Services (2.33)</p> <p>Writing (1.11)</p> <p>Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.1-2.6)</p> <p>Inquiry (1.1)</p> <p>Making Connections (6.7)</p>	<p><i>Continued from page 110</i></p> <p>What are the biggest problems associated with water quality in my state?</p>	<p>Students will</p> <p>Health</p> <ul style="list-style-type: none"> • identify agencies that protect the environment. <p>Science</p> <ul style="list-style-type: none"> • model the water cycle. • explore how the water cycle affects the atmosphere. • identify questions. • use appropriate equipment, tools, techniques, technology, and mathematics. • use evidence, logic, and scientific knowledge. • design and conduct different kinds of scientific investigations. • communicate designs, procedures, and results. • review and analyze scientific investigations. • demonstrate the role science plays in everyday life and explore different careers in science. • recognize how science is used to understand populations, resources, and environments. • examine the role of science in explaining and predicting natural events. <p>English/Language Arts</p> <ul style="list-style-type: none"> • write transactive pieces. • apply writing-to-learn and writing-to-demonstrate-learning-strategies. • identify types of resources. • develop questions to obtain information. • use appropriate delivery techniques. • use vocabulary and comprehension strategies. 	<p>Students will</p> <ul style="list-style-type: none"> • visit water treatment plant,. Develop graphic organizers to demonstrate the filtration process. Contact local judge/ executive or other officials to determine if local communities are planning for future water supplies and discuss how individuals can become involved in the process. • take field trips to power plants or invite electric company representatives to school. Discuss how pollutants linked to acid rain are controlled. Develop diagrams demonstrating energy production including pollutant controls.

Grade 5 Interdisciplinary Model Kentucky Water Systems

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> investigate sources of local drinking water (e.g., river, stream, lake, groundwater) and how it is supplied (e.g., public system, private well). List threats to drinking water sources. Design maps showing how water gets from the source to their house and school. research impact of acid rain in European countries. Use vocabulary and comprehension strategies to understand text. Compare European problems and efforts to address acid rain to those in the United States. 	<p>Students will</p> <ul style="list-style-type: none"> collect data on cistern and well-water quality. Sample and test cistern and well water. Contact county health departments to determine if poor water quality impacts health of residents. test pH of rainwater in selected areas. Record the pH for designated periods of time. Create charts to display findings and share results of monitoring with class. 	<p>Students will</p> <ul style="list-style-type: none"> survey family members about drinking water resources and quality. Compare data with other class members. design models of the water cycle. Present to class describing how acid rain becomes part of this system and how the water cycle affects the atmosphere. 	<p>Students will</p> <ul style="list-style-type: none"> prepare reports based on survey of community awareness of water problems. Identify steps that should be taken to protect future drinking water supplies. write articles explaining acid rain's impacts on aquatic and terrestrial ecosystems.

Grade 5 Interdisciplinary Model

Kentucky Water Systems

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Number, Integers and Place Value (2.7, 2.8, 2.12)</p> <p>Measurement (2.10)</p> <p>Writing (1.11)</p>	<p>How can mathematics be used to solve real-world problems?</p>	<p>Students will</p> <p>Mathematics</p> <ul style="list-style-type: none"> • explore appropriate estimation procedures. • determine area and perimeter of rectangles. • relate units within a measurement system. • explore how sample size affects the reliability of the outcome. <p>English/Language Arts</p> <ul style="list-style-type: none"> • apply writing-to-learn and writing-to-demonstrate-learning strategies. 	<p>Students will</p> <ul style="list-style-type: none"> • use a variety of standard and nonstandard measuring tools (e.g., sticks, feet) to measure predetermined portions of streams. Compare standard to nonstandard units. • discuss the importance of uniform sample size. Using a dropper, determine how many drops it takes to fill a graduated cylinder to exactly one milliliter and record information. Estimate how many algae may be present in one milliliter. • analyze school water bills for two to three months. Analyze and display data. Compute average amount of water used per day and daily cost. Discuss ways to save water at home and school.

Grade 5 Interdisciplinary Model Kentucky Water Systems

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • use standard measurements to determine area and perimeter of portion of stream. • put one drop of water on a microscope slide. Examine and count number of algae present. Record information. Determine number of algae in one milliliter based on number present in one drop. • gather and display data on personal daily water usage (e.g., flushing toilet, showers, tub baths, handwashing, teeth brushing). Calculate amount of water used each day. Use the following data to complete calculations: <ul style="list-style-type: none"> - Flushing toilet = 5 gal. - Showers = 35 gal. - Handwashing = 2 gal. - Teeth brushing = 2 gal. - Tub bath = 36 gal. 	<p>Students will</p> <ul style="list-style-type: none"> • explore concept of constant area and changing perimeter by varying their perimeter measurements. Using grid paper, show how the perimeter can change but the area would remain the same for the predetermined space. • use data from all flexible groups to construct graphs showing the number of algae found in each water sample. • investigate amount of water needed to produce one cow or one ton of grain. Create illustrated flow charts to display findings. Write reflective pieces on the importance of water in their lives. 	<p>Students will</p> <ul style="list-style-type: none"> • use grid paper to determine an area in stream that could be dammed and fenced for aquatic animals. Determine area, perimeter, and amount of fencing needed to fence off portion of the stream. • use graphs to determine the number of algae found in the predetermined portion of the stream. Compare these results to their estimates. Explain how their uniform sample size is related to the total population of algae in the stream and whether one sample or many samples gives a better representation of the algae population in the stream. • investigate water requirements of various wildlife species. Contact wildlife biologists for information on how animals cope with dry weather. Develop graphs comparing the requirements of different species. 	<p>Students will</p> <ul style="list-style-type: none"> • develop linear measurement systems. Determine names for units. Create measurement tools. Use measurement tools to find area and perimeter of space • write letters to county extension agents explaining their sampling methods and how they could be used to determine population size of other organisms. • create children's books illustrating the use of mathematics to solve water-related problems.

Grade 5 Interdisciplinary Model

Kentucky Water Systems

Sample Extensions for Diverse Learners

Tong's first language is Hmong and Erminda's is Spanish. They have beginning English listening and speaking skills. They are paired with Cheryl and Blaine, two English speaking students. While viewing videos on acid rain, they use collaborative listening such as the dictogloss technique previously taught to the students. Each child has the responsibility for the learning of group members. Prior to viewing videos, the teacher provides each child with different focus questions to guide their listening. The teacher uses a K-W-L chart to develop at least two of the questions with each student. Tong and Erminda's questions incorporate targeted key language concepts and English vocabulary. As they watch the video, each student listens for the information needed to answer their individual questions. After viewing the video, they review their questions and share the information they learned with their partners. They use the information to create Venn diagrams (*Types of extensions: purpose and appropriateness, procedures and routines, participation, motivation, demonstration of knowledge*).

Trevor likes to solve math problems, and create structures from Legos. He has a moderate hearing loss. During class he and his teacher use a system to amplify sounds and speech (e.g., Phonic Ear). In addition, the teacher provides Trevor with printed directions for assignments, class activities, and class notes prior to reviewing them with the class. The teacher reduces the pace of his speech and provides additional time to clarify information (*Types of extensions: procedures and routines, pace, participation, level of support, motivation, resources and materials*).

Steve and Laurel communicate well with peers and are interested in science and technology. They use random strategies for solving math problems and have difficulty remembering problem-solving steps. They routinely use an individual checklist that outlines specific problem-solving steps. They conference frequently with their teacher and are provided with models (e.g., calculating perimeter and area) to use when solving math problems. The teacher first gives them a scaffolded math problem. They review math computation facts in the learning center and use a computer software program to practice math (*Types of extensions: complexity, procedures and routines, resources and materials, level of support, participation*).

Eric is a high achieving math student. He gets along well with his peers but prefers to work alone on projects. He is given the opportunity to choose a topic concerning water and conduct a small research project. To demonstrate his findings, he will develop a multimedia presentation. Arrangements will be made so he can work independently without interruptions (*Types of extensions: complexity, magnitude, pace, order of learning, demonstration of knowledge*).

Tasha has a special interest in science and has an advanced level of knowledge about environmental issues. She will interview a university professor of environmental chemistry or engineering to find out about current research related to water pollution. The gifted/talented specialist will arrange for her to visit and supervise her production of a photo journal report of the research, laboratory equipment used in sampling and analysis, and other information gathered from her interview (*Types of extensions: purpose and appropriateness, complexity, environment, level of support, motivation, demonstration of knowledge*).

As a result of consultation and planning with the classroom teacher, the gifted/talented specialist will work with a group of students including those who participate in the Future Problem Solving (FPS) event as members of the academic team. The group will learn and refine their skills in FPS by applying the future problem solving process to scenarios dealing with acid rain and water pollution. (Future Problem Solving Across the Curriculum includes several such scenarios.) They will present their problems and best solutions to the class by performing skits (*Types of extensions: purpose and appropriateness, complexity, level of support, time, resources and materials, motivation, demonstration of knowledge, participation*).

Grade 5 Interdisciplinary Model

Kentucky Water Systems

Resources

Internet Addresses:

<http://www2/northstar.k12.ak.us/schools/upk/chena/changing/changing.html> (Water Cycle)

<http://www.isc.rit.edu/~aesopwww/activities/cloud.html> (Clouds: The Water Cycle-Making Clouds)

NOTES

Grade 5 Interdisciplinary Model
Transfer of Energy

NOTES

Grade 5 Interdisciplinary Model

Transfer of Energy

Broad-Based Theme:	Transfer of Energy
Content Area:	Science
Supplemental Content Areas:	English/Language Arts, Arts and Humanities (Music), Mathematics

Unit Framework Overview:

In this unit framework, students investigate connections among sources of energy. Sample activities to guide students through an inquiry process to explore

- how energy is used in their lives;
- forms of energy including heat, light, sound, electricity, and motion; and
- different forms of energy transfer.

Pages of the unit frameworks are arranged in pairs. On the left page of each pair are guiding questions along with related academic expectations and correlations to the *Program of Studies*. The unit frameworks are organized around guiding questions that direct teachers' choices of activities. Students should be able to answer these questions at the end of the unit.

Sample activities for each instructional setting (e.g., whole groups, flexible groups, learning centers, independent work) are listed in columns. Activities are aligned horizontally to demonstrate how instruction moves from guided or facilitated learning to independent learning and self-reflection by students. Sample activities are varied to support students' individual learning styles and interests. Students work in appropriate large and small cooperative groups and as independent learners. While sample activities address *Program of Studies* content they are not intended to be comprehensive. Some content bullets included in the unit frameworks designate skills and processes (e.g., mathematical procedures and computations) that should be taught throughout the year but are not repeated in every framework. (See the *Curriculum and Evaluation Standards for School Mathematics Addenda Series*, National Council of Teachers of Mathematics, for additional activities in mathematics. The *National Science Education Standards* provide more detail and explanations regarding scientific inquiry, conceptual understandings, and applications/connections.) Teachers are responsible for planning instruction that includes appropriate extensions for unit framework activities to address the interests, needs, and abilities of all students including gifted and talented, children with disabilities, and those with limited English proficiency.

Guiding Questions:

- How do motion and sound transfer energy?
- How do heat, light, and electricity transfer energy?
- How can I collect, organize, and describe data?

Grade 5 Interdisciplinary Model

Transfer of Energy

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.1 - 2.6)</p> <p>Music (1.14)</p> <p>Reading (1.2)</p>	<p>How do motion and sound transfer energy?</p>	<p>Students will Science</p> <ul style="list-style-type: none"> demonstrate that energy is a property. observe forms of energy transfer. identify questions. use appropriate equipment, tools, techniques, technology, and mathematics. use evidence, logic, and scientific knowledge. design and conduct different kinds of scientific investigations. communicate designs, procedures, and results. review and analyze scientific investigations. demonstrate the role science plays in everyday life and explore different careers in science. <p>Arts and Humanities</p> <ul style="list-style-type: none"> express elements of music. create a single composition using the elements of music. create music to communicate ideas and emotions. <p>English/Language Arts</p> <ul style="list-style-type: none"> identify meaning from reading materials. respond to reading materials. apply writing-to-learn and writing-to-demonstrate-learning strategies. <p>Mathematics</p> <ul style="list-style-type: none"> pose questions; collect, organize, display data; choose an appropriate way to collect and represent data. 	<p>Students will</p> <ul style="list-style-type: none"> investigate sources used to create energy in school (e.g., light, heat, people, water). Develop illustrated diagrams for classroom. Identify examples and nonexamples of motion. communicate with piano tuners to discuss instruments and procedures used to tune piano. Tap various objects made from different materials to produce sound. Draw conclusions about how size, shape, and materials affect sound. Record information in journals. recognize that each sound can be represented by musical letters. Explore familiar tunes in flexible groups. Number bottles containing various amounts of water to identify sounds and letters of the musical scale that correspond to the appropriate bottle (e.g., 1=C, 2=D, 3=E, 4=F, 5=G, 6=A, 7=B, 8=C). Develop line graph for one tune to show melodic change.

Grade 5 Interdisciplinary Model

Transfer of Energy

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> test influence of length on pendulum swing. Suspend metal washer from one-foot-long string. Count number of back and forth swings in 30 seconds. Find number of swings per second. Vary length of string and record results. Chart data and draw conclusions. read <i>Ty's One Man Band</i> to identify repeated patterns of sounds. Use bottles with varying amounts of water to develop musical sounds and songs. Create melody and lyrics describing transfer of energy by sound. order eight bottles from lowest pitch produced to highest. Number each bottle. Create familiar tune (e.g., Twinkle, Twinkle Little Star) notating with numbers. 	<p>Students will</p> <ul style="list-style-type: none"> test influence of weight on pendulum swing. Follow flexible group procedure, keeping string length constant, and adding weights to string. Develop chart to record effects of weight on pendulum. Draw conclusions and share with classmates. place ruler on desk extending it 10 inches beyond edge. Hold one end firmly on desk, press down, and let go of free end. Repeat with 8 in., 6 in., 4 in., then 2 in. from the edge. Develop diagrams and narratives describing differences in sounds. use tunes created in flexible groups to experiment with other musical elements (e.g., dynamics, tempo). Discuss with classmates how musical elements enhanced the tune. 	<p>Students will</p> <ul style="list-style-type: none"> roll objects (e.g., marbles, skates, or cars) down inclined plane. Start each object at same position and measure distance traveled. Record information on chart or graph. Draw conclusions. listen to tape recordings of various household sounds (e.g., tea kettle, typewriter, vacuum cleaner, alarm clock, can opener, garbage disposal, washer, dryer). Describe sounds and identify objects making sounds. listen to familiar tunes on tape and replicate melodies using bottles. 	<p>Students will</p> <ul style="list-style-type: none"> find object that travels farthest on an inclined plane and explain why in journals. Discuss findings with class. Review and analyze peers' scientific investigations. develop musical instruments. Describe how size and shape relates to sounds produced. Present findings to class. develop reflective passages describing what makes melodies interesting.

Grade 5 Interdisciplinary Model

Transfer of Energy

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Scientific Ways of Thinking and Working, Patterns, Systems, Scale and Models, Constancy, and Change Over Time (2.1 - 2.6)</p> <p>Visual Arts (1.13)</p> <p>Writing (1.11)</p> <p>Inquiry (1.1)</p>	<p>How do heat, light, and electricity transfer energy?</p>	<p>Students will Science</p> <ul style="list-style-type: none"> • observe that energy is a property. • observe forms of energy transfer. • observe the ways heat can move. • recognize that the Sun's energy arrives as light. • observe how electrical circuits transfer electrical energy. • identify questions. • use appropriate equipment, tools, techniques, technology, and mathematics. • use evidence, logic, and scientific knowledge. • design and conduct different kinds of scientific investigations. • communicate designs, procedures, and results. • review and analyze scientific investigations. • examine the role of science in explaining and predicting natural events. <p>Arts and Humanities</p> <ul style="list-style-type: none"> • use a variety of media and art processes to produce two- and three-dimensional works of art. • describe how media and processes are used for creating a variety of art works. <p>English/Language Arts</p> <ul style="list-style-type: none"> • apply writing-to-learn and writing-to-demonstrate-learning strategies. • write personal pieces. • prepare and deliver formal presentations. • explore research tools to gather information. <p>Mathematics</p> <ul style="list-style-type: none"> • choose an appropriate way to collect and represent data. 	<p>Students will</p> <ul style="list-style-type: none"> • observe demonstration of how light travels. Place flashlights in boxes pointing up. Turn flashlight on with all other room lights turned off. Cover box, punch hole in top, then in sides. Describe how light traveled. Discuss other situations that demonstrate how light travels. Make lists of various sources of light. Use a variety of art media and processes to develop illustrations of each. Describe how the various media and processes were used to create illustrations. • experiment with heat transfer using thermometers to measure temperature of 1/4 cup of water with various heated objects (e.g., aluminum, copper, nickel, iron, silver) of equal weight placed inside. Record data and draw conclusions about heat content of materials. • contact local power plant to find answers to the following questions: <ul style="list-style-type: none"> - How many people does it serve? - How much coal is used? - What is cost to produce energy? - How is energy produced and delivered to their homes? - What are energy sources of the future?

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Transfer of Energy

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • observe various sources of light (e.g., candle, light bulb, flashlight, sunlight) from different distances. Record observations in journals. Order light sources from least to most intense. • describe effects of motion (e.g., rub hands together, feel air pump that has been used, rub brass button with wool, rub pencil eraser on paper, shake jars of sand) on heat of objects. Develop personal narrative to describe experience with heat caused by motion (e.g., bike brakes). • design tests to identify conductors and insulators (e.g., aluminum, soil, rubber, lead, glass, plastic, copper wire, liquids) of electricity. Devise classification system. 	<p>Students will</p> <ul style="list-style-type: none"> • experiment with mirrors in water and light sources in darkened rooms. Adjust mirrors to reflect light on wall. Record observations in journals. Use Internet to gather information about rainbows. Compare results of experiment with rainbow in journals. Reproduce sequence of colors using paint, crayons, or tissue paper. Describe process of creating art in journals. • use graph paper to prepare maps of school grounds. Use thermometers to measure temperatures of air, water, and soil in different locations. Place in appropriate squares on map. Develop graphs to share results for one week. Compare temperatures. Discuss reasons for differences. • experiment with circuits and switches. Design circuit boards identifying best conductors of electricity. 	<p>Students will</p> <ul style="list-style-type: none"> • test effects of light on colored materials (e.g., construction paper fading, colored water temperature). Design experiments to test effects of Sun on various colors of material, record data, and draw conclusions. • fill mixing bowl 3/4 full of cold water, measure and record temperature, then run electric beater in bowl for 10 minutes. Measure and record temperature again. Experiment with varying amounts of water and different amounts of time. Share results with classmates. Discuss reasons for observed patterns. • devise two different circuits using bulbs, batteries, wire, and holders. Draw diagrams of circuits. 	<p>Students will</p> <ul style="list-style-type: none"> • present experiments to class. Discuss conclusions. Critique experimental designs of classmates. • describe in science journals effects of heat upon matter. • determine relationships between brightness of bulbs and arrangements of circuit.

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Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Probability and Statistics (2.8, 2.12, 2.13)</p> <p>Mathematical Procedures (2.8)</p> <p>Writing (1.11)</p> <p>Speaking/Listening/Observing (1.3, 1.4, 1.12)</p> <p>Inquiry (1.1)</p>	<p>How can I collect, organize, and describe data?</p>	<p>Students will</p> <p>Mathematics</p> <ul style="list-style-type: none"> • develop meaning and interpretation of arithmetic mean (average) for numerical data. • pose questions: collect, organize, display data; choose an appropriate way to collect and represent data. • make predictions. • find mean, median, mode, and range for a set of data. • use counting techniques, tree diagrams, and tables to explore probability experiments. • explore how sample size affects the reliability of the outcome. <p>English/Language Arts</p> <ul style="list-style-type: none"> • develop questions to obtain information. • apply writing-to-learn and writing-to-demonstrate learning strategies. • apply listening, speaking, and observing skills. • write transactive pieces. <p>Science</p> <p>All <i>Program of Studies</i> Scientific Inquiry bullets are included with this guiding question.</p> <ul style="list-style-type: none"> • demonstrate that energy is a property. • observe forms of energy transfer. 	<p>Students will</p> <ul style="list-style-type: none"> • identify processes to describe and summarize data. Use reasoning skills for averaging. Estimate average height within classroom. Discuss reasonableness of answers identifying what an average means. Gather data and make predictions about other classrooms. Examine mean, median, mode, and range of data. Investigate averages of other classroom topics. • talk with school transportation director to research amount of energy used to transport students to and from school. Determine number of buses serving school, miles per gallon of gas, and total miles driven each day. Devise charts or graphs to display information. Calculate gallons of gasoline consumed per day by each bus. Find mean, median, mode, and range of gasoline consumed for all buses. <p style="text-align: right;"><i>Continued on page 126</i></p>

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Transfer of Energy

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • play games blowing paper clips across flat surfaces. Determine how far clips travel. Blow three times and find average distance. Compare individual, small group, and whole class results. Find and compare mean, median, mode, and range of data sets. Record results in science journals. Determine if samples were typical. Examine reasons for differences. Describe motion of clips. • calculate amount of carbon dioxide produced by each bus if two pounds of carbon dioxide are released per gallon of gasoline consumed. Develop charts and graphs to display mean, median, mode, and range of pounds of carbon dioxide produced by all buses. 	<p>Students will</p> <ul style="list-style-type: none"> • design ramps to experiment with effects of height on distance traveled by toy cars after they leave a ramp. Measure distance traveled when ramp is placed at different heights (e.g., 6 inches, 8 inches, 10 inches, 12 inches). Test car three times at each height. Record distance traveled. Find average at each height. Determine mean, median, mode, and range of data sets. Draw conclusions about effects of height on distance car travels after it leaves ramp. • research amount of energy used by people who drive personal vehicles to school. Count all cars in parking lot or survey staff. Investigate total number of miles driven and find mean, median, and mode. Display data in graphs or charts. 	<p>Students will</p> <ul style="list-style-type: none"> • design investigations to experiment with effects of weight on distance traveled after objects leave the bottom of ramps. Use three balls of same diameter but different weights. Roll down ramp. Measure distance traveled by each ball after it leaves ramp. Conduct three trials for each ball. Record data for each trial. Find mean, median, mode, and range. Draw conclusions about effects of weight on distance traveled. • pose questions about amount of energy used by family's vehicle each day. Find total number of miles driven and average amount of gasoline used on daily, weekly, and monthly basis. Choose appropriate means to collect and display data. Draw conclusions based on results. 	<p>Students will</p> <ul style="list-style-type: none"> • find mean, median, mode, and range of given data sets. Report findings to class. • analyze energy-use statistics from different countries. Compare to U.S. data. Develop graphs to illustrate differences.

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Transfer of Energy

Academic Expectations	Guiding Questions	Correlation to the Program of Studies	Large/Whole Group Instruction
<p>Probability and Statistics (2.8, 2.12, 2.13)</p> <p>Mathematical Procedures (2.8)</p> <p>Writing (1.11)</p> <p>Speaking/Listening/Observing (1.3, 1.4, 1.12)</p> <p>Inquiry (1.1)</p>	<p><i>Continued from page 124</i></p> <p>How can I collect, organize, and describe data?</p>	<p>Students will Mathematics</p> <ul style="list-style-type: none"> • develop meaning and interpretation of arithmetic mean (average) for numerical data. • pose questions: collect, organize, display data; choose an appropriate way to collect and represent data. • make predictions. • find mean, median, mode, and range for a set of data. • use counting techniques, tree diagrams, and tables to explore probability experiments. • explore how sample size affects the reliability of the outcome. <p>English/Language Arts</p> <ul style="list-style-type: none"> • develop questions to obtain information. • apply writing-to-learn and writing-to-demonstrate-learning strategies. • apply listening, speaking, and observing skills. • write transactive pieces. 	<p>Students will</p> <ul style="list-style-type: none"> • participate in class discussions about random samples. Identify why and how samples are taken. Make predictions about whole populations from samples. Discuss the probability that the same pattern will occur with each sample. Ask local law enforcement officers to use a speed recording device to help collect data on the speed of cars that pass in front of the school for a one hour period. Collect data for every fifth car. Create tables to organize data. Determine mean, median, mode, and range for data set. Make predictions about whole populations from samples.

Grade 5 Interdisciplinary Model

Transfer of Energy

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> collect data on all cars that pass the school in one hour. Determine mean, median, mode, and range for data set. 	<p>Students will</p> <ul style="list-style-type: none"> compare data from all cars to data collected on every fifth car. Create graphs to illustrate differences in mean, median, mode, and range of data sets. 	<p>Students will</p> <ul style="list-style-type: none"> identify every tenth car from flexible group data sets. Compare speed of every tenth car with speed of every fifth car. 	<p>Students will</p> <ul style="list-style-type: none"> compare data for every fifth and tenth car. Draw conclusions about whether the random samples accurately represent the speed of all cars that pass their school.

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Sample Extensions for Diverse Learners

Whitney is legally blind. She uses assistive technology (e.g., Braille text, Braille calculators, Braille writers), peer mentorship, and intensive guided practice. Whitney is a talented writer and is working on improving her interpersonal relationships. She is especially shy when presenting to classmates. Whitney needs more time to complete activities. She requires assistance from an instructional assistant while performing science experiments. She will use her writing skills to demonstrate knowledge. Using peer mentoring and cooperative learning experiences, she will work in small group settings to develop and apply targeted social skills. As her confidence increases, she will make mini-presentations to the whole class (*Types of extensions: purpose and appropriateness, complexity, time, pace, environment, order of learning, procedures and routines, resources and materials, demonstration of knowledge, level of support, participation, motivation, magnitude*).

Surekha, Thomas, and Paul are creative students who are active in problem-solving team activities (e.g., Odyssey of the Mind) and show marked interest in science. They will create an invention powered by a chain reaction of all of the energy sources studied in academic team activities (e.g., Future Problem Solvers, Odyssey of the Mind). They will name their invention, write a warranty/guarantee document, design packaging, and prepare a marketing strategy. Melanie, an advanced math student, working under the supervision of a local business finance/marketing manager, will assist them in preparing a budget and determining pricing. The students will present their inventions and support materials along with a commercial to the class and/or in a school wide science fair or open house (*Types of extensions: purpose and appropriateness, complexity, motivation, resources and materials, environment, time, magnitude, participation, demonstration of knowledge, level of support*).

Ian is beginning to understand spoken English but has difficulty with content specific language. He has demonstrated high levels of computation and problem-solving skills. He will be assisted by a peer tutor to develop a math vocabulary dictionary (*Types of extensions: purpose and appropriateness, complexity, magnitude, time, pace, demonstration of knowledge, level of support*).

Resources

Internet Addresses:

<http://www.kcts.org/nyelabs/> (Bill Nye the Science Guy)

<http://www.solarhouse.com> (Visit a Solarhouse in Maine)

<http://www.energy.ca.gov/education> (Energy Quest - Energy Education Web Site)

<http://www.energy.iastate.edu/> (Energy Efficiency Education and Information Transfer Home Series Publications List)

Grade 5 Interdisciplinary Model
Transfer of Energy

NOTES

Grade 5 Interdisciplinary Model
Economics

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Grade 5 Interdisciplinary Model

Economics

Broad-Based Theme:	Structure and Function of Economic Systems
Content Area:	Social Studies
Supplemental Content Areas:	English/Language Arts, Arts and Humanities (Drama), Mathematics

Unit Framework Overview:

In this unit framework, students investigate the delicate balance among economic factors that influence their daily lives. Sample activities guide students through an inquiry process to examine

- scarcity,
- supply and demand,
- goods and services,
- production and consumerism,
- effective consumer decision-making skills, and
- practical applications of consumer rights and responsibilities.

Pages of the unit frameworks are arranged in pairs. On the left page of each pair are guiding questions along with related academic expectations and correlations to the *Program of Studies*. Unit frameworks are organized around guiding questions that direct teachers' choices of activities. Students should be able to answer these questions by the end of the unit framework.

Sample activities for each instructional setting (e.g., whole group, flexible groups, learning centers, independent work) are listed in columns. Activities are aligned horizontally to demonstrate how instruction moves from guided or facilitated learning to independent learning and self-reflection by the students. Sample activities are varied to support students' individual learning styles and interests. Students work in appropriate large and small cooperative groups and as independent learners. While sample activities address *Program of Studies* content, they are not intended to be comprehensive. Some content bullets included in the unit frameworks designate skills and processes that should be taught throughout the year (e.g., mathematical procedures and computations) but are not repeated in every framework. (See the *Curriculum and Evaluation Standards for School Mathematics Addenda Series*, National Council of Teachers of Mathematics, for additional activities in mathematics. The *National Science Education Standards* provide more detail and explanations regarding scientific inquiry, conceptual understandings, and applications/connections.) Teachers are responsible for planning instruction that includes appropriate extensions for unit framework activities to address the interests, needs, and abilities of all students including gifted and talented, children with disabilities, and those with limited English proficiency.

Guiding Questions:

- How do businesses and their organization affect the economy of my community?
- How do production strategies of businesses in my community affect productivity, profits, and workers?
- How can I analyze data tables and graphs to identify relationships and trends?

Grade 5 Interdisciplinary Model

Economics

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Economics (2.18)</p> <p>Consumer Decisions (2.30)</p> <p>Inquiry (1.1)</p> <p>Writing (1.11)</p> <p>Productive Team Membership (4.2)</p>	<p>How do businesses and their organization affect the economy of my community?</p>	<p>Students will</p> <p>Social Studies</p> <ul style="list-style-type: none"> • recognize the impact of economic factors (e.g., security, growth, desire for profits) on decisions made by businesses and individuals. • examine basic components of the economic system of the United States. <p>English/Language Arts</p> <ul style="list-style-type: none"> • employ reading strategies for inquiry projects. • write transactive pieces. • apply writing-to-learn and writing-to-demonstrate learning strategies. • use information from technology and other resources to produce writing. • apply characteristics of effective writing. • develop questions to obtain information. • adjust communication based on audience, purpose, and situation. • prepare and deliver formal presentations. • use appropriate delivery techniques. • apply listening, speaking, observing skills. • write literary pieces. • identify and apply information contained in directions and forms. <p>Health</p> <ul style="list-style-type: none"> • analyze differences between needs and wants and provide examples. • practice planning and saving strategies for specific purchases. 	<p>Students will</p> <ul style="list-style-type: none"> • use various resources to gather information concerning types of business organizations (e.g., sole proprietorship, partnership corporations). Chart advantages and disadvantages of each type. • interview community business leaders or chamber of commerce representatives. Examine pros and cons of each type of business. Discuss reasons why people would want a company to locate in their community. • interview fast food franchise employees and owners. Discuss work experiences and business aspects of owning franchises. Chart difficulties and advantages of owning or working in franchise businesses.

Grade 5 Interdisciplinary Model Economics

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> investigate and compare various community businesses according to their organizational makeup. Chart community businesses in each category. Explain how one business organization affects other businesses within a community. analyze why profits are important for businesses. Examine how competition affects profits. Discuss how businesses compete. Develop advertisements to bring people to their garage sale instead of their neighbor's sale. use factual information concerning franchises to identify benefits and restrictions of franchise ownership. Research costs associated with ownership. Develop presentations, including graphic organizers, to share with class. 	<p>Students will</p> <ul style="list-style-type: none"> work with partners to develop poetry (e.g., biographical poem) that describes characteristics of business organizations. develop flow charts identifying flow of income for one business and show its impact on community. gather information about franchises in their community. Develop flow charts identifying how the business affects economy of their community. 	<p>Students will</p> <ul style="list-style-type: none"> research how to acquire a hamburger stand (e.g., could buy a fast food franchise, could start their own company). Determine which would be the best economic decision. Respond in an on-demand writing situation. complete job application forms. Identify qualifications they possess that would make them good candidates for the position. describe examples of franchise advertisements they have seen. Identify facts, promises, and persuasive techniques. Record in journals how ads impact their decisions to purchase products. Select a product that meets a personal need or want. Write reasons why they would buy this product. Implement saving strategies. 	<p>Students will</p> <ul style="list-style-type: none"> develop on-demand writing pieces to describe business decisions. Use criteria for effective writing. use criteria for effective writing to prepare articles about job openings in their community. Include descriptions of necessary qualifications. develop flow charts to identify how businesses affect their community's economy.

Grade 5 Interdisciplinary Model

Economics

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Economics (2.18)</p> <p>Inquiry (1.1)</p> <p>Reading (1.2)</p> <p>Consumer Decisions (2.30)</p> <p>Decision Making</p>	<p>How do production strategies of businesses in my community affect productivity, profits, and workers?</p>	<p>Students will</p> <p>Social Studies</p> <ul style="list-style-type: none"> trace change over time in the economic system of the United States. <p>Health</p> <ul style="list-style-type: none"> analyze wants and needs. <p>English/Language Arts</p> <ul style="list-style-type: none"> employ reading strategies. apply writing-to-learn and writing-to-demonstrate-learning strategies. write transactive pieces. write literary pieces. apply characteristics of effective writing. use appropriate delivery techniques. explore research tools to gather information. <p>Arts and Humanities</p> <ul style="list-style-type: none"> collaborate with others to create dramatic works using elements of drama. reflect on and revise dramatic works. examine effects of time, place, and personality on dramatic works. evaluate personal dramatic creations. use elements of music. 	<p>Students will</p> <ul style="list-style-type: none"> observe presentations by local historians. Identify early economic impacts in community due to business growth and development. Organize illustrated community business time lines. participate in field trips to observe production methods. Identify specialized skills needed for each production process. Work in groups to create graphic organizers that illustrate production methods and their impact on the world of work. Present and describe organizers to class. analyze historical change over time in production methods. Identify effect of specialization. Develop time lines to show goods and services produced by United States workers and methods used to improve products. Develop products using assembly-line processes. Analyze effectiveness, quality, and cost benefits of assembly-line techniques.

Grade 5 Interdisciplinary Model

Economics

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> analyze trends in local businesses. Identify needs of community, production methods, wages, benefits, and working conditions during given time periods. Develop group presentations to share information. develop business partnerships with group members. Survey class to identify wants and needs. Design services or products that meet wants or needs. Develop action plans for selling goods or services during class economic fair. use variety of reading materials to gather information about real-world issues concerning production methods. Develop brochures to describe one method. Investigate use of child labor across the world to produce low-cost items. Debate child labor issues. 	<p>Students will</p> <ul style="list-style-type: none"> identify businesses, past or present, that produce goods in their community. Determine impact on economy. Identify production methods. Write and perform dramatic works to demonstrate impacts of businesses on community. write jingles to advertise products or services to be sold by business partnership during economic fair. Use elements of music including rhythm, melody, tempo, and dynamics. employ reading strategies to locate and analyze information about famous entrepreneurs or inventors. Develop transactive writing and oral presentations about how inventors changed the way we do things. 	<p>Students will</p> <ul style="list-style-type: none"> investigate how their local economy is part of a larger regional economy. Trace the path of locally produced goods as they are transported across the country. E-mail students in cities across the U.S. to see if they use products produced in their state or community. write articles analyzing in writing why costs of new products or inventions decrease over time and cite examples. explore reasons why people become dissatisfied with their jobs. Investigate the formation of labor unions. Interview people in their community to determine if and why they joined a labor union. 	<p>Students will</p> <ul style="list-style-type: none"> write news articles persuading community members to purchase items produced locally or to shop in smaller, local shops. develop graphic organizers to evaluate effectiveness of business partnerships. Address profits, production methods, competition, advertising strategies, and cooperative labor efforts. Determine whether good economic decisions were made. Present findings to class and panel of community business leaders. write stories about how economic changes affect people's lives.

Grade 5 Interdisciplinary Model

Economics

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Number Computation (2.7)</p> <p>Algebraic Ideas (2.8, 2.11, 2.12)</p> <p>Writing (1.11)</p> <p>Problem Solving (5.5)</p>	<p>How can I analyze data tables and graphs to identify relationships and trends?</p>	<p>Students will</p> <p>Mathematics</p> <ul style="list-style-type: none"> • create, recognize, extend, find, and write rules for number patterns. • explore variables and solve equations using variables. <p>English/Language Arts</p> <ul style="list-style-type: none"> • apply writing-to-learn and writing-to-demonstrate learning strategies. 	<p>Students will</p> <ul style="list-style-type: none"> • discuss salaries of different jobs. Include duties, benefits, and relative importance of each job. Create databases of salaries for jobs in their community.

Grade 5 Interdisciplinary Model Economics

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • explore classified ads in newspapers. Collect data from old newspapers. Gather labor data from other sources. Create charts and graphs to display data. Examine trends. Draw conclusions about shifts in labor markets. Share information in round table discussions. 	<p>Students will</p> <ul style="list-style-type: none"> • investigate hourly pay for jobs that employ teenagers. Calculate take-home pay for different length work days and work weeks. Create tables to organize data. Generate equations for calculating pay. Investigate tax rates for different income levels. Describe patterns in math journals. 	<p>Students will</p> <ul style="list-style-type: none"> • write journal entries describing their dream career. Explain why the career is attractive, how it reflects their interests, and how the career would benefit their lives and the lives of others in the community. 	<p>Students will</p> <ul style="list-style-type: none"> • write editorials explaining the importance of teenagers in local economies.

Grade 5 Interdisciplinary Model

Economics

Sample Extensions for Diverse Learners

Luisa's first language is Spanish. She has been in the United States for five months and is just beginning to learn English. She is fluent in Spanish. Working with her English speaking peers, other ESL students, and her teacher, she selects one business in her new community and in Madrid to investigate and compare how each business affects other businesses within a community. She uses resources such as the Internet, a captioned video about a local business, interviews with family members, e-mail, and an on-site tour of a local business to learn about the businesses. Her teacher prepares a scaffolded study guide for her to use to gather information. She uses a software translation program (Spanish-English) and an electronic bilingual dictionary. She receives instruction on vocabulary terms. She prepares a visual representation of her research using English labels. She begins some writing in English with the assistance of the ESL teacher. (*Types of extensions: purpose and appropriateness, procedures and routines, order of learning, resources and materials, level of support, environment, motivation*).

Kathy and Pete have artistic and technology skills and a keen interest in local Kentucky artists and crafts. They will create advertisements (computer-generated or handmade) that illustrate crafts in Kentucky. Kathy and Pete will generate articles describing the impact local artists and crafts have had on Kentucky's economy (*Types of extensions: purpose and appropriateness, pace, demonstration of knowledge, level of support, participation*).

Paul works on the class newspaper. He learns at the same level and rate as his peers but needs large print or oral presentation of information. He also uses a computer voice-to-text, to prepare presentations. Paul will work with Kathy and Pete to create text for their advertisements and articles on Kentucky crafts (*Types of extensions: purpose and appropriateness, procedures and routines, order of learning, resources and materials, level of support*).

Tod, Janine, Alisia, and Tyrone are expressive readers and writers, like to draw, and are volunteers for their school carnival. They need extended support and strategies to understand relationships among fractions, decimals, and percents. In their flexible groups and in the learning center, the teacher reviews the concepts using mini-lessons, provides written models for reference, and scaffolded pie charts that show relationships (e.g., $\frac{1}{2}$, 50%, $\frac{1}{4}$, .25). As they solve equations related to the carnival, they use the pie chart to review the decimal and percentage for $\frac{1}{6}$. Tod, Janine, Alisia, and Tyrone look for examples of fractions, decimals, and percentages at home and in the community. They use the examples to create new pie charts (*Types of extensions: purpose and appropriateness, procedures and routines, environment, demonstration of knowledge, participation, level of support*).

Cecil and Alicia demonstrate a quick grasp of concepts and verbal fluency beyond their peers. In the study of competition and profits, they had clearly mastered concepts yet to be introduced. To ensure further learning, the teacher arranged for Cecil to tour UPS and interview several managers to find out how UPS competes with other delivery services (e.g., employee training, time and motion studies, incentives and rewards, use of technology). Alicia will have a similar experience at a U.S. Post Office. The two students will compare experiences, strategies used, and other data. They will consider differences that are attributable to government and private business, and effects of UPS and the U.S. Postal Service in Kentucky on Kentucky's economy. They will work with the gifted and talented teacher to select and prepare an appropriate format and audience(s) for sharing their experiences and findings (*Types of extensions: purpose and appropriateness, complexity, environment, resources and materials, level of support, time, magnitude, participation, demonstration of knowledge, order of learning*).

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Resources

Internet Addresses:

<http://www.ncsa.uiuc.edu/edu/RSE/RSEyellow/gnb.html> (a stock market game with lesson plans)

<http://206.225.211.15/> (a stock market simulation game)

NOTES

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NOTES

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Broad-Based Theme:	Geographic Interaction Among People
Content Area:	Social Studies
Supplemental Content Areas:	English/Language Arts, Science Mathematics, Arts and Humanities (Visual Arts, Drama, Dance)

Unit Framework Overview:

In this unit framework, students explore the regions, climates, products, resources, and geographic relationships of the United States. Sample activities guide students through an inquiry process to

- study the different regions of the country, and
- identify the characteristics and resources of different regions.

Pages of the unit frameworks are arranged in pairs. On the left page of each pair are guiding questions along with related academic expectations and correlations to the *Program of Studies*. Unit frameworks are organized around guiding questions that direct teachers' choices of activities. Students should be able to answer these questions by the end of the unit framework.

Sample activities for each instructional setting (e.g., whole group, flexible groups, learning centers, independent work) are listed in columns. Activities are aligned horizontally to demonstrate how instruction moves from guided or facilitated learning to independent learning and self-reflection by students. Sample activities are varied to support students' individual learning styles and interests. Students work in appropriate large and small cooperative groups and as independent learners. While sample activities address *Program of Studies* content they are not intended to be comprehensive. Some content bullets included in the unit frameworks designate skills and processes (e.g., mathematical procedures and computations) that should be taught throughout the year but are not repeated in every framework. (See the *Curriculum and Evaluation Standards for School Mathematics Addenda Series*, National Council of Teachers of Mathematics, for additional activities in mathematics. The *National Science Education Standards* provide more detail and explanations regarding scientific inquiry, conceptual understandings, and applications/connections.) Teachers are responsible for planning instruction that includes appropriate extensions for unit framework activities to address the interests, needs, and abilities of all students including gifted and talented, children with disabilities, and those with limited English proficiency.

Guiding Questions:

- How can I gather information to learn about my country?
- How do geographic tools help me learn about my country?
- What regional conditions create different landscapes throughout North America?
- How are geographic issues reflected through writing?
- How do the arts reflect the history and culture of my state?
- How can mathematics be used in real-world situations?

Grade 5 Interdisciplinary Model

Geography

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Geography (2.19)</p> <p>Inquiry (1.1)</p> <p>Reading (1.2)</p> <p>Writing (1.11)</p> <p>Productive Team Membership (4.2)</p>	<p>How can I gather information to learn about my country?</p>	<p>Students will</p> <p>Social Studies</p> <ul style="list-style-type: none"> • understand how culture in the United States has been influenced by languages, literature, arts, beliefs, and behaviors of diverse groups. • recognize basic similarities and differences in the United States, Canada, and Mexico. • recognize unique places in the United States. • recognize the significance of important, symbols, monuments, patriotic songs, poems, and written passages in the history of the United States. <p>English/Language Arts</p> <ul style="list-style-type: none"> • respond to reading materials. • recognize characteristics and elements of different reading materials. • employ reading strategies for inquiry projects. • use information from a variety of sources to create writing. • write transactive pieces. • explore research tools to gather ideas and information. • explore technology as a means of communication. • write literacy pieces. • select and read materials for enjoyment. • apply writing-to-learn and writing-to-demonstrate-learning strategies. 	<p>Students will</p> <ul style="list-style-type: none"> • use K-W-L charts as an organizational tool for beginning research on regions of the United States (e.g., Southeast, Southwest, Northeast, Northwest, Midwest), Mexico, and Canada. Recognize basic similarities and differences in the geography and cultures of the United States, Canada and Mexico. Develop mental maps of the United States. • exchange information about regions of United States with students in other regions . Identify specific photographs, artifacts, or messages to send as clues about their region. Use descriptions of unique places to help identify regions. • use graphic organizers to chart similarities and differences of settings in different literary works set in America (e.g., <i>An Armadillo From Amarillo</i>). Develop similar literary writings about their region where the setting plays a major role.

Grade 5 Interdisciplinary Model

Geography

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • use maps, tour books, magazines, and Internet to gather information from the “W” column on K-W-L chart. Prepare interactive learning centers about regions that include important, symbols, monuments, patriotic songs, poems, and written passages about the history of the United States. • select informational reading materials. Analyze physical environment of regions. Create collages illustrating geography of diverse regions. • select and read novels or short stories that take place in America (e.g., <i>Little House on Prairie</i>). Explain how geography affected lives of central characters. Use information as basis for personal writings (e.g., personal narrative, memoir) to explain how geography of their region affects their lives. 	<p>Students will</p> <ul style="list-style-type: none"> • use interactive materials to develop skits that reflect cultural uniqueness of geographical regions. Identify language, literature, art, beliefs, and behaviors of diverse groups demonstrating how they have impacted regions. • identify physical characteristics of places in the United States. Develop children’s books that identify purposeful interactions within regional settings to share with younger students. • read and analyze various materials (e.g., pamphlets, poetry) about different geographic regions of United States to use as models for developing transactive pieces about their region. Create pamphlets or poetry to describe their region of United States to share at open house. 	<p>Students will</p> <ul style="list-style-type: none"> • gather information from various sources about North American regions. Use information to create brochures to be placed in local tourism offices. • listen carefully to lyrics of <i>America the Beautiful</i> and <i>This Land is Your Land</i>. Identify physical features of the United States mentioned in songs. Develop charts identifying where those features can be found. • identify a major road that goes through their community, into other states, and across the country. E-mail students in schools along the route to identify cultural characteristics of different communities. Read literature that is representative of the states, communities, or geographic regions. Create murals of the route, identifying important cities, buildings, and historic places. 	<p>Students will</p> <ul style="list-style-type: none"> • create posters that celebrate the cultural diversity of their communities. • identify unique characteristics of geographic regions across the U.S. Create symbols to represent characteristics. Use symbols to illustrate U.S. maps. • use writing-to-demonstrate-learning strategies (e.g., graphic organizers, open-response questions) to compare two regions of the United States as they were presented in literature.

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Geography

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Geography (2.19)</p> <p>Inquiry (1.1)</p> <p>Reading (1.2)</p> <p>Multiple Perspectives (6.1)</p> <p>Writing (1.11)</p> <p>Visual Arts (1.13)</p>	<p>How do geographic tools help me learn about my country?</p>	<p>Students will</p> <p>Social Studies</p> <ul style="list-style-type: none"> • understand how people of United States use technology to modify environment. • use variety of tools to find and present geographic information. • understand human settlement patterns. <p>English/Language Arts</p> <ul style="list-style-type: none"> • identify meaning from reading materials. • prepare and deliver formal presentations. • apply listening, speaking, observing skills. • apply writing-to-learn and writing-to-demonstrate-learning strategies. • write transactive pieces. • explore research tools to gather ideas and information. • use appropriate delivery techniques. • adjust communication based on audience, purpose, and situation. • explore technology as a means of communication. • use vocabulary and comprehension strategies. • identify types of resources for a variety of tasks. <p>Arts and Humanities</p> <ul style="list-style-type: none"> • use a variety of media and art processes to produce two- and three-dimensional works of art. 	<p>Student will</p> <ul style="list-style-type: none"> • use various resources representing the Earth (e.g., maps, globes, mental maps) to find and explain human and physical geographic features of United States regions, Canada, and Mexico. Devise comparison matrix to represent findings. Investigate think-pair-share process as learning tool. • plan virtual trips to other North American cities (e.g., determine routes, estimate amount of time for trip, amount and type of clothing, amount of money needed). Prepare charts describing information. Share with class through multimedia presentations.

Grade 5 Interdisciplinary Model Geography

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • use think-pair-share process in small groups to gather and compare information about regions of North America. Create videos for school library that examine movement and settlement. • read travel brochures to compare regions of North America. Use vocabulary and comprehension strategies to understand text. Plot locations on maps and develop consumer awareness articles identifying travel highlights for tourists. 	<p>Students will</p> <ul style="list-style-type: none"> • use political maps to analyze jobs specific to the geographic region where they live. Choose one job and to analyze skills necessary for employment. Create visual representations explaining the occupation and how it is specific to their geographic region. • plan and develop idea exchange programs across Internet and e-mail with students from other geographic regions. Investigate various resources available to complete task. Identify how location influences their lives. Create graphic organizers to demonstrate how places are suited for particular people. 	<p>Students will</p> <ul style="list-style-type: none"> • make charts to analyze how humans have interacted with the physical environment of different regions to meet their needs. • gather weather information from several areas of the country. Compare to their own weather. E-mail students in those areas to ask how they enjoy and adjust to their weather conditions. 	<p>Students will</p> <ul style="list-style-type: none"> • write articles for local newspapers describing how the environment has shaped the growth communities across the country and how people have changed the environment. • develop informational presentations using one or more art forms (e.g., music, visual arts, drama, or dance) about selected regions. Present to various audiences (e.g., primary students, parent/grandparent groups). Evaluate presentations of classmates based on established criteria.

Grade 5 Interdisciplinary Model

Geography

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
Scientific Ways of Thinking and Working Patterns, Systems, Scale and Models, Constancy and Change Over Time (2.1 -2.6) Geography (2.19) Inquiry (1.1) Reading (1.2) Writing (1.11) Visual Arts (1.13, 2.22, 2.26) Music (1.14, 2.22, 2.26) Drama (2.22 - 2.26)	What regional conditions create different landscapes throughout North America?	Students will Science <ul style="list-style-type: none"> • recognize how science is used to understand populations, resources and environments. • demonstrate the role science plays in everyday life and explore different careers in science. • examine the role of science in explaining and predicting natural events. <i>All Program of Studies Scientific Inquiry bullets are found in this guiding question.</i> English/Language Arts <ul style="list-style-type: none"> • employ reading strategies. • use vocabulary and comprehension strategies. • respond to reading materials. • write transactive pieces. • apply writing-to-learn and writing-to-demonstrate learning strategies. • apply listening, speaking, observing skills. Arts and Humanities <ul style="list-style-type: none"> • use a variety of media and art processes to produce two- and three-dimensional works of art. • express elements of music. • collaborate with others to create dramatic works using the elements of drama. • analyze how elements of art and principles of design are used in a variety of art works. 	Students will <ul style="list-style-type: none"> • write letters to foresters or wildlife biologists of different geographic regions requesting materials regarding plant communities and forest types found in their region. • participate in discussions with local experts (e.g., agriculture agent, agronomist, farmer, landscape developer) to identify influence of geographic factors on landscaping. Visit nursery, outdoor classroom, or school grounds to identify properties of flora and fauna (e.g., structure and function, basic needs, effects on surroundings, life cycles). • collect examples of ways that water, air, and land can be affected or destroyed by people, animals, and nature itself. Keep scrapbooks or bulletin boards to classify pictures or articles found by students to identify how United States history has been influenced by its physical environment.

Grade 5 Interdisciplinary Model Geography

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • read and summarize information from foresters and biologists. Use vocabulary and comprehension strategies to understand text. Create databases of North American trees and wildflowers. • examine adaptations of plants in their geographic region. Create illustrated identification keys explaining plant adaptations. • participate in mini-lessons to apply writing strategies to editorials. Design charts for classroom identifying important steps. 	<p>Students will</p> <ul style="list-style-type: none"> • analyze artistic works showing various types of forested landscapes. Describe in journals media and processes used. Identify forests types, trees, or wildflowers in art work. • examine nursery catalogs to compile lists of plants, trees, and shrubs suitable for each region. Develop and implement landscape plan for their school. • identify environmental problems around their school. Design investigation, collect data, analyze, and make recommendations for change. Present findings (e.g., class, principal, parent-teacher organization, or school board). 	<p>Students will</p> <ul style="list-style-type: none"> • use various media and processes to develop two- and three-dimensional forested landscapes. • use nursery catalogs to develop landscape plans for home. Present landscape design to class. • research how the environment, natural resources, and people of a geographic region have changed over time. Create illustrated time lines. 	<p>Students will</p> <ul style="list-style-type: none"> • present landscapes to the class explaining the types of trees and wildflowers included and their location in the United States. Explain what makes the plant communities different. • write articles explaining how geographic factors affect distribution of plants. Include examples of plants found in their region that are not found in others. • write editorials voicing opinions about environmental issues (e.g., new highways, airport expansion, vehicle emissions, coal mining, barge traffic, industrial pollutants, landfills) that affect their regions.

Grade 5 Interdisciplinary Model

Geography

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Reading (1.2)</p> <p>Writing (1.11)</p> <p>Speaking/Listening/Observing (1.3, 1.4, 1.12)</p> <p>Geography (2.19)</p>	<p>How are geographic issues reflected through writing?</p>	<p>Students will</p> <p>English/Language Arts</p> <ul style="list-style-type: none"> • recognize characteristics and elements of different kinds of literary works. • respond to reading materials. • write transactive pieces. • use information from technology and other resources to produce writing. • apply listening, speaking, and observing skills. • adjust communication based on audience, purpose, and situation. <p>Social Studies</p> <ul style="list-style-type: none"> • examine social interactions among diverse groups. • understand how culture in the United States has been influenced by languages, literature, arts, beliefs, and behaviors of diverse groups. 	<p>Students will</p> <ul style="list-style-type: none"> • read newspaper editorials of current events that affect their regions. Respond to authors' points of view through class debates. • identify and read works of North American authors. Determine how regional cultures are reflected in their writing. • select one important current event or issue. Analyze various North American newspapers to see how it is reported in different regions. Create comparison charts.

Grade 5 Interdisciplinary Model Geography

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • read and compare editorials. Analyze writing techniques. Apply techniques to their own writing. • read and compare different genres (e.g., poems, novels, short stories) by North American authors. Generate lists of phrases specific to local cultures. Create illustrations to explain meanings of the phrases. • participate in mini-lessons to learn effective debating and speaking techniques. 	<p>Students will</p> <ul style="list-style-type: none"> • compare issues, editorial techniques, and text styles of old newspaper to today's newspapers. Compare features in graphic organizers. • compare two books by North American authors from different cultures. Discuss similarities and differences. • use newspapers from their regions to develop TV or radio news broadcast about local events. 	<p>Students will</p> <ul style="list-style-type: none"> • develop class newspapers containing editorials and news articles. • design murals to showcase North American authors. • read articles about current issues. Write persuasive pieces explaining why they agree or disagree with authors' points of view. 	<p>Students will</p> <ul style="list-style-type: none"> • design newspaper production booklets for next year's fifth graders. Describe production techniques and hints on preparing editorials. • write articles evaluating one piece of literature by North American author. Evaluation should include discussion of how the writing of this author has influenced culture. • participate in class debate about current issues concerning the diversity in their community.

Grade 5 Interdisciplinary Model

Geography

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>How do the arts reflect the history and culture of my state?</p> <p>Speaking/Listening/Observing (1.3, 1.4, 1.12)</p> <p>Dance (1.15, 2.22, 2.26)</p> <p>Visual Arts (1.13, 2.22, 2.26)</p> <p>Music (1.14, 2.22, 2.26)</p> <p>Drama (2.22, 2.26)</p> <p>Writing (1.11)</p>		<p>Students will Arts and Humanities All <i>Program of Studies</i> Music bullets are included in this guiding question.</p> <ul style="list-style-type: none"> analyze elements of drama in a variety of dramatic works. collaborate with others to create dramatic works using the elements of drama. communicate recognition of specific cultures, periods, and styles within dramatic works. examine the effects of time, place, and personality on dramatic works. use a variety of media and art processes to produce two- and three-dimensional works of art. <p>All <i>Program of Studies</i> Dance bullets are included in this guiding question.</p> <p>English/Language Arts</p> <ul style="list-style-type: none"> apply writing-to-learn and writing-to-demonstrate-learning strategies. write transactive pieces. prepare and deliver formal presentations. 	<p>Students will</p> <ul style="list-style-type: none"> use graphic organizers to compare United States folk tales. Respond to the characteristics and elements of tales through class discussion. Select folk tales to read with partners for enjoyment. discuss origins of dance. Identify specific cultures, purposes, and styles. View films and television performances of dances. Discuss the elements of dance performances. Compare works from diverse cultures, periods, and styles. listen to a variety of examples of musical styles (e.g., bluegrass, folk, instrumental, work songs, game songs). Develop journal entries to <ul style="list-style-type: none"> Describe the elements. Analyze how the elements relate to each other. Interpret how it makes them feel. Judge whether they like it and justify thoughts.

Grade 5 Interdisciplinary Model

Geography

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> develop written dramatic works about life in one region of the United States. Describe in journals how the works reflect cultures, periods, and styles. Reflect on group work and make revisions. participate in folk, square, and ethnic dances. Compare how the dance samples are similar and different. Record in journals their thoughts and feelings about the dances. listen to one style of music (e.g., Chinese, African, Native American). Identify the characteristics that are unique to that style. 	<p>Students will</p> <ul style="list-style-type: none"> use variety of media and processes to develop props for dramatic works. Use peer discussion to describe how art works reflect specific cultures. create dances with a beginning, middle, and end using a combination of locomotor and nonlocomotor movements to perform at community functions. Create journal entries to describe how locomotor and nonlocomotor movements are used to create simple dance and how dance differs from other physical movement. compare bluegrass music to rap or other popular styles. Describe how the elements of music are used in each style. 	<p>Students will</p> <ul style="list-style-type: none"> create dances that make characters from regional dramatic works come alive. Present to class alone, with partner, or in small groups. Explain how dances express culture and history of America's people. respond to prompts (e.g., A friend was absent from school today. Use appropriate terminology to write directions for doing one of the dances we learned. E-mail directions and explanations to the friend.). compose musical pieces in their favorite style. 	<p>Students will</p> <ul style="list-style-type: none"> present dramatic readings, visual arts, and dances. Identify cultures, periods, and styles. Critique work of peers through class discussion. develop journal entries to describe dances. Identify style, culture, purpose, origin, and history. write articles describing how the elements of music were used in their compositions.

Grade 5 Interdisciplinary Model Geography

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Numbers, Integers, and Place Value, Fractions and Decimals, Number Computation (2.7, 2.8, 2.12)</p> <p>Algebraic Ideas (2.11)</p> <p>Probability and Statistics (2.13)</p> <p>Writing (1.11)</p>	<p>How can mathematics be used in real-world situations?</p>	<p>Students will Mathematics</p> <ul style="list-style-type: none"> • read, write, and model numbers through 100,000,000 developing place value for 10 million 100 million. • order and compare numbers to 100,000,000. • generalize a rule for ordered pairs. <p>English/Language Arts</p> <ul style="list-style-type: none"> • apply writing-to-learn and writing-to-demonstrate-learning strategies. 	<p>Students will</p> <ul style="list-style-type: none"> • collect print and nonprint materials (e.g., almanacs, newspapers, magazines, posters) that can be used to develop real-world statistics problems. Explore how data was collected and how it is used and misused. • illustrate relationship between rectangular coordinate graphs to that of longitude and latitude on flat maps. <p style="text-align: right;"><i>Continued on page 154</i></p>

Grade 5 Interdisciplinary Model Geography

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • use statistics from print and nonprint materials to create databases of North American regions. Analyze databases for trends and patterns. Create graphs to communicate regional differences. • identify places in the world (e.g., London, Paris, Africa) by using longitude and latitude coordinates (e.g., ordered pairs). Develop charts of coordinates to identify places. Develop rules regarding coordinate pairs. 	<p>Students will</p> <ul style="list-style-type: none"> • use maps to find location of North American cities with largest populations. Draw conclusions about why those cities have larger populations. Create models of the numbers. Order and compare numbers. • use longitude and latitude to find major cities around the world. Develop charts that have cities located in northern, southern, western, and eastern hemispheres. List coordinates. 	<p>Students will</p> <ul style="list-style-type: none"> • use resources to find highest and lowest elevations in United States and its regions. Devise chart to identify place, state, and elevation at highest and lowest points in their state and find difference in miles or feet between those two points. Order numbers from largest to smallest. • gather information about five cities in the United States. Develop riddle books. Include numerical clues with last clue being the actual latitude and longitude coordinates for that city. Give a generalized rule for coordinate pairs. 	<p>Students will</p> <ul style="list-style-type: none"> • participate in student teacher conferences demonstrating understanding of reading, writing, ordering, and modeling large numbers. • use latitudes and longitudes to locate geographic features on different continents.

Grade 5 Interdisciplinary Model

Geography

Academic Expectations	Guiding Questions	Correlations to the Program of Studies	Large/Whole Group Instruction
<p>Numbers, Integers and Place Value, Number Computation (2.7, 2.8, 2.12)</p> <p>Measurement (2.10)</p> <p>Writing (2.11)</p>	<p><i>Continued from page 152</i></p> <p>How can mathematics be used in real-world situations?</p>	<p>Students will Mathematics</p> <ul style="list-style-type: none"> • use charts and tables to determine time schedules and time zones. <p>English/Language Arts</p> <ul style="list-style-type: none"> • apply writing-to-learn and writing-to-demonstrate-learning strategies. 	<p>Students will</p> <ul style="list-style-type: none"> • go on virtual tours of United States. Collect and examine numerical information about each place visited. Travel from hometowns to Washington, D.C., using maps to find approximate distance. Enter information on personal route log tables. Use reference materials to find examples of numbers (e.g., longitude and latitude on map, population, feet above or below sea level) that describe Washington. Continue by investigating other cities in United States.

Grade 5 Interdisciplinary Model Geography

Flexible Groups	Learning Centers	Independent Work	Authentic Assessments
<p>Students will</p> <ul style="list-style-type: none"> • identify time zones across the world. Compare time zones as they travel west. Develop methods for recording time in each time zone around world. Compare to present time in their area. Identify patterns. 	<p>Students will</p> <ul style="list-style-type: none"> • prepare charts to describe virtual tours to ten cities throughout the world. Investigate distance (miles) to each city and length of flight time from Kentucky. Create tables to organize data. 	<p>Students will</p> <ul style="list-style-type: none"> • determine appropriate times to place conference calls to people living in each time zone of United States (e.g., What time of your school day would be best to call a person in each region?). Identify ten cities to call, the time in that city, and the time in their city. 	<p>Students will</p> <ul style="list-style-type: none"> • plan airline arrival and departure times for a trip across several time zones. Explain in journals how trip was planned.

Grade 5 Interdisciplinary Model

Geography

Sample Extensions for Diverse Learners

Caitlin and Evan have a keen interest in and talents related to the arts. They will present examples of literature, art, music, and architecture that reflect geographical regions to their class and parent teacher organization (*Types of extensions: purpose and appropriateness, complexity, time, participation, motivation, demonstration of knowledge, routines and procedures, resources and materials*).

Alberto immigrated from Brazil two years ago and has intermediate English language skills. With an English-speaking partner, he will search news sources for images of Hispanic barrios (neighborhoods). He will tell his partner the reasons why his family immigrated to the United States, and the two will then compare the images they found with images of neighborhoods in their town. They will share their findings with the class. A final activity will be to create a short skit about Alberto's immigration experience incorporating their research on neighborhoods. He can also teach the class to read his poem in Spanish. She also works with the ESL teacher on developing English (*Types of extensions: purpose and appropriateness, complexity, environment, order of learning, procedures and routines, resources and materials, demonstration of knowledge, level of support, participation, motivation*).

Jarrold, Nick, Jessica, and Jenna are active in academic activities (e.g., Future Problem Solving). Following their interviews with community leaders that identify current situations and needed developments in their communities, these students will develop proposals suggesting solutions to current community problems. The students will present their proposals to community leaders. They will apply the Future Problem Solving (FPS) model for the proposals (*Types of extensions: purpose and appropriateness, complexity, magnitude, time, participation, level of support, environment, procedures and routines, motivation, demonstration of knowledge*).

Maryanne, Jonathan, and Lamar are very expressive and work well in small groups. They are developing readers and writers. They are working on strategies to help them retrieve math facts efficiently, set goals for completing math problems involving moderate risk-taking, and making generalizations of how they use math in everyday life. Prior to identifying real-world problems using newspapers, menus, maps, and grocery receipts, their teacher has the students brainstorm how math is used everyday. The teacher works with Maryanne, Jonathan, and Lamar on specific algorithms (e.g., $6 + 3 = \underline{\hspace{1cm}}$ start big and count on, any number $\times 2$ is double the number) and developing mnemonics (e.g., DRAW - Discover the sign, Read the problem, Answer or "draw" a conceptual representation of the problem using lines and tallies and check, Write the answer from *Teaching Students with Learning Problems*, Mercer, Cecil D. and Ann R., McMillan Publishing Company, New York, 1993). Maryanne and Lamar use store receipts and Jonathan uses newspaper articles and menus to practice computational skills and apply specific algorithms and mnemonics. In the learning center, they work on timed problems to increase their speed and accuracy. They are given extra points for correcting errors (*Types of extensions: purpose and appropriateness, complexity, magnitude, procedures and routines, level of support, participation, motivation, environment*).

Grade 5 Interdisciplinary Model

Geography

Sample Extensions for Diverse Learners

Brett needs enlarged materials to read and discriminate detail in pictures. He can access regular print through low-vision devices such as a closed-circuit TV or hand-held magnification for short periods of time. The teacher uses highlighters to enhance visual images. Brett uses a reading stand or lap desk to help reduce postural strain while doing close work. He needs additional time or receives a decreased number of visual images for response (*Types of extensions: purpose and appropriateness, complexity, magnitude, procedures and routines, level of support, participation, motivation, environment*).

Resources

Internet Addresses:

<http://www.ces.uga.edu/Agriculture./agecon/MARKETDATA.html> (market news and data for cotton, dairy, fruits/vegetables, livestock, grain, and peanuts)

<http://www.state.ky.us/tour/tour.htm> (Tour Kentucky)

<http://www.state.ky.us/agencies/gov.symbols.htm> (Kentucky's state symbols)

<http://www.state.ky.us/> (Kentucky's homepage)

<http://www.state.ky.us/agencies/parks/constsq2.htm> (Constitution Square State Historic Site)

NOTES

**Grade 5 Interdisciplinary Model
Government and Historical Change**

NOTES

Primary and Intermediate Levels Student Resources

Publications: Books

Allen, P. *Mr. Archimedes Bath*

Allen, P. *Who Sank the Boat*

Barrett, Judith & Ron. *Cloudy With a Chance of Meatballs*, Schuster Children's, 1982.

Brown, Margaret Wise. *Good Night Moon*

Burns, Marilyn. *The Greedy Triangle*

Carter, C., J. Heiman, J. Mitchell, and J. Morgan. "No Plain Pet" in *Personal Finance Economics, K-2: Pocketwise*. New York: National Council on Economic Education, 1996.

Carter, C., J. Heiman, J. Mitchell, and J. Morgan. "Penelope Gets Wheels" in *Personal Finance Economics, K-2: Pocketwise*. New York: National Council on Economic Education, 1996.

Carter, C., J. Heiman, J. Mitchell, and J. Morgan. "What is Money" in *Personal Finance Economics, K-2: Pocketwise*. New York: National Council on Economic Education, 1996.

Carter, C., J. Heiman, J. Mitchell, and J. Morgan. "A Very Good Day" in *Personal Finance Economics, K-2: Pocketwise*. New York: National Council on Economic Education, 1996.

Carter, C., J. Heiman, J. Mitchell, and J. Morgan. "Oh, What To Do" in *Personal Finance Economics, K-2: Pocketwise*. New York: National Council on Economic Education, 1996.

Cherry, Lynn. *An Armadillo From Amarillo*

Comber, B. *Dad's Diet*

Eckert, Allen. *The Frontiersmen*

Gretz, S. *Teddy Bears Go Shopping*

Hoban, T. *Is it larger? Is it smaller?*

Johnston, T. *Farmer Mack Measures His Pig*

Maystero, Betsy. *The Story of Money*

Myller, R. *How big is a Foot?*

Odell, Scott. *The Island of the Blue Dolphin*

Shaw, Charles G. *It Looked Like Spilt Milk*

Primary and Intermediate Levels Student Resources

Silverstein, S. "Bad Cold" in *Falling Up*

Singer, Marilyn. *Nine O'Clock Lullaby*

Slobodkina, E. *Caps for Sale*

Spurr, E. *The Biggest Birthday Cake in the World*

Thomes, James Alexander. *Follow the River*

Thomes, James Alexander. *Panther in the Sky*

Walter, Mildred Pits. *Ty's One-Man Band*

Wild, M. *Something Absolutely Enormous*

Wilder, Laura Ingalls. *Little House On the Prairie*

Publications: Magazines

Zillions, A Children's Consumer Awareness Magazine. Consumers Union of U.S., Inc., P.O. Box 54861, Boulder, Colorado 80322-4861

Consumer Reports, A Consumer Magazine. Consumers Union of U.S. Inc., P.O. Box 53029, Boulder, Colorado 80322-3029